

EDUCATION**The University of Manchester**

Manchester, United Kingdom

MSc in Thermal Power and Fluid Engineering

2022 – 2023

Classification: Predicted MSc Distinction

Relevant Coursework: Computational Fluid Dynamics, Heat Transfer, Advanced Power, Experimental Methods

Delhi Technological University

New Delhi, India

BTech in Mechanical Engineering

2018 – 2022

Classification: First Class with Distinction

Relevant Coursework: Fluid Mechanics, Mechanics of Solids, Design of Machine Elements, Robotic Engineering

WORK EXPERIENCE**Formula Bharat**

Coimbatore (Hybrid), India

Cost And Manufacturing Judge

January 2023

- Assessed teams participating in the Formula Bharat 2023 in the Cost and Manufacturing static event.
- Evaluated attention to detail and critical thinking of teams in constructing a hypothetical real case scenario cost report on manufacturing Lithium-Ion cells for a Formula Student team.
- Appraised bill of materials and related supporting documents on cost sustainability and make versus buy decisions with qualitative and quantitative outlooks.

Shakti Pulley Manufacturing Company

New Delhi, India

Mechanical Engineering Intern

December 2020 – January 2021

- Assisted in manufacturing operations of pulleys and mechanical couplings and examined standard operating procedures with an evaluation of existing design methodology of components using finite element analysis modelling and simulations.
- Introduced Solidworks PDM for ease of material inventory management, and introduced Gantt Charts for assembly level work in the factory.

Space Renaissance Initiative

New Delhi, India

Robotics and Hardware Intern

June 2021 – July 2021

- Developed method of transmitting power from electric motor to translational motion with damping system for shocks and tolerance within given spatial constraint.
- Modelled Darrieus Vertical Axis Wind Turbine design for kinematic analyses using ANSYS rigid dynamics

PROJECTS**Uncertainty of CFD Predictions of Boiling in a Nuclear Reactor Fuel Channel**

Manchester, United Kingdom

Postgraduate Researcher, Project Advisor: Dr. Giovanni Giustini

September 2021 - Current

- Estimation of peak cladding temperatures (PCT) in nuclear reactor fuel channel using computational multiphase fluid dynamics (CMFD) with Eulerian Multiphase (EMP) models on Siemens StarCCM+.
- Modelling of macroscopic wall boiling using RPI heat transfer model, simulated using Java macros and sampling operating conditions from a Gaussian distribution about estimated mean values of boiling variables.
- Use of GRI uncertainty quantification models and statistical method to propagate uncertainty from input parameters through the codes to achieve engineered estimates of PCT at different reactor conditions, comparing them to conservative regulatory algorithms.

Formula Student - Team Defianz Racing

New Delhi, India

Powertrain, Cost Lead, Project Advisor: Prof. Qasim Murtaza

September 2018 – March 2020

- Led the university's Formula Student team - which competes in the largest project management and engineering design competition around the globe by fabricating formula one-style vehicles from the ground-up.
- Ranked Second Best Asian Team at Formula Student Czech 2020 and Best Indian team for Formula Student 2019 season.
- Worked on optimization and remodelled FSAE intake and exhaust manifold systems using CFD on StarCCM+ and Ricardo; converted FSAE nozzle from venturi design to deLaval using pressure plots.
- Eliminated the need for fuel tank baffles, by simulating fuel sloshing under running conditions with fuel pump inside the fuel tank in multiphase-CFD and optimizing spatial constraints.
- Spearheaded cost and manufacturing analysis and scrutinized various decisions undergone while making a Formula Student prototype vehicle and devised a method to evaluate the investment of resources in manufacturing based on the Westinghouse system of rating, while documenting the relevant parts and processes in the Costed Bill of Material document.
- Built wiring for the vehicle including the ECU, crucial and auxiliary sensors and tuned a custom ECU to introduce launch and traction control, and overviewed work on telemetry and the data acquisition systems.

MeitY Motor Controller for Electric Vehicle Project

New Delhi, India

Undergraduate Project Research Lead, Project Advisor: Prof. Mini Sreejeth

May 2021 – August 2021

- Computed and supervised thermal analysis on heat sinks applied on MOSFETs and comparison of FEA results between Indian and Chinese technologies under the Ministry of Electronics and Information Technology aided R&D Project on Motor Controller for Electric Vehicles, DTU.
- Used thermal CFD solvers to simulate convection heat transfer characteristics of heat sinks in Neighbourhood Electric Vehicles.

Investigation into Multi-Metal Usage in Grid-Stiffened Structures

New Delhi, India

Undergraduate Researcher, Project Advisor: Prof. Vikas Rastogi

September 2021 – May 2022

- Observe the response behaviour of such grid stiffened structures under vertical compression tests and seeks to find buckling and bending characteristics on both static and structural analyses done on ANSYS mechanical workbench.
- Modelled thermal constraints on isogrid elements to gauge effect of using titanium and nickel-based alloys in applications with thermal differential.
- Multiple metal orthogrid Implementation on Trans-sonic/Supersonic Nozzle using fluid structure interaction (FSI) research using CFD solvers on ANSYS Fluent.

PUBLICATIONS

- Tripathi, Kshitij et al. (2022). “Static Analysis of Multi-Metal Usage in Grid Stiffened Structures”. In: vol. 27. 18, pp. 285–290. url: <https://ebooks.iospress.nl/doi/10.3233/ATDE220755>.
- Tripathi, K. et al. (2022). “Fabrication of Isogrids by Conventional and Unconventional Techniques: A Comparative Review Study”. In: Recent Advances in Industrial Production. Ed. by Rajeev Agrawal et al. Singapore: Springer Singapore, pp. 429–436. url: https://link.springer.com/chapter/10.1007/978-981-16-5281-3_41.
- Tripathi, K., Ghosh A., et al. (2022). “Thermal Study of MOSFET heat sinks for Motor Controller in Neighborhood Electric Vehicles (NEV)”. In: [International Journal of Electric and Hybrid Vehicles Inderscience](#) (Accepted).
- Kshitij Tripathi, Kunal Kukreja and AK Madan, Evolution in Manufacturing of Grid Stiffened Structures through CAM and Additive Techniques, International Journal of Advanced Research in Engineering and Technology (IJARET), 12(4), 2021, pp. 217-225. doi: [10.34218/IJARET.12.4.2021.025](https://doi.org/10.34218/IJARET.12.4.2021.025)

TECHNICAL SKILLS

Technical: SolidWorks, NI LabVIEW, ANSYS (Mechanical, Fluent, ICEPAK), Siemens StarCCM+, Siemens FEMAP, RICARDO WAVE 1-D, C++, OpenFOAM, MS-Office, C++, MATLAB, Python, Latex

Languages: English, Hindi

Soft Skills: Communication, Adaptability, Time Management, Teamwork, Problem Solving, Inter-personal skills, Initiative, Reliability, Attention to Detail, Positive Attitude

CERTIFICATIONS

Neural Networks and Deep learning, DeepLearning.AI	July 2021
Finite Element Method for Problems In Physics, University of Michigan	May 2021
Introduction To Self-Driving Cars, University of Michigan	Apr 2021
2-course graduate-level certification in Python and Data Structures	Apr 2020
Secured 113/120 in TOEFL iBT and 315/340 in GRE	Oct 2021
Excel Skills For Business: Essentials, Macquarie University	Nov 2021
Mastering Programming with MATLAB, Vanderbilt University	Nov 2021

VOLUNTEER WORK

Administration Team Member - Society of Automotive Engineers (SAE) chapter, Delhi Technological University	September 2018 – September 2020
Logistics Team Member, Lead - Engifest, Delhi Technological University	January 2019, January 2020
Logistics and Hospitality Team Member - Invictus, Delhi Technological University	February 2019, February 2020