

Profile

CFD & DEM Simulation | Battery development | Multiphase Solver Development | Experienced Design Engineer | FEM Simulations for Fluid Structure Interaction | Thermal Simulations for Battery |

Academic Experience

Student Research Assistant , Institut für Technische Verbrennung, Aachen

February 2022-Present

- Spray Simulations (using Fotran) on RWTH cluster preparing reduced order models in coherence with experimental results.
- Extending the model for multi component multiphase fuel injections using ECN data for validation along with in house experimental data.

Student Research Assistant, Institute of Jet Propulsion, RWTH Aachen

December 2022 — April 2023

- LES for Compressor Blade Cascades using Trace for Periodic Boundary Conditions in coordination with MTU.
- Postprocessing using Tecplot and Pytecplot for Temperature and Pressure Contours.
- Data filtering and model validation in python.

Education

Masters in Computer Aided Conception in Mechanical Engineering, RWTH Aachen, Aachen

October 2021 — April 2024

Grade: 2,0

Bachelors in Mechanical Engineering, Maulana Azad National Institute of Technology Bhopal, Bhopal

April 2013 — June 2017

- Graduated among top 10% of Class.
- Grade 1,9

Conference

Dhar R., Saha A., Deshmukh A. Y., Majumder S., Palmer, J., Augustin, P., Reddemann, Grenga T., Kneer, R., and Pitsch, H., A Reduced-Order Model for Multiphase Simulation of Transient Inert Multicomponent Sprays in the Context of Compression Ignition Engines, IACM - 22nd Computational Fluids Conference (CFC), April 25 - 28, 2023, Palais des Festivals et de Congr'es, Cannes, France

Professional Work

Master Thesis at SIEMENS, Munich

May 2023 — November 2023

- Implementing DEM models for the calendering process in battery production simulation.
- Non-newtonian fluid simulations for shear thinning battery slurrys along with Fluid Structure interaction with particle binders.
- Model validations with experimental data on CFD DEM Coupling
- Model extension on creating digital twins for complete battery simulation
- Calendering extension with Vapor drying simulation for Electrodes.

Details

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Date / Place of birth

08/11/1995

Kolkata, India

Nationality

Indian

Links

Linkedin

Skills

Star CCM +

Java

OpenFOAM

NX

Python

FORTRAN

Ansys

Data Analysis

Tecplot

Matlab

Solidworks

Hypermesh

Contract Negotiation

Management Skills

Flexibility and Adaptability

Languages

German

English

Intern at SIEMENS, Munich

March 2023 — May 2023

- Created and validated models for Battery Slurry mixing using CCM + and NX.
- Worked on OpenFOAM for running mixing modules.

Assistant Manager at Bharat Petroleum Corporation Limited, Vadodara

July 2017 — June 2021

- Pipeline Designing and Integration with Existing Automation and Safety PLC. 600
 Cr. project executed under 3 member team including Design validation,
 Tendering and Negotiating contracts, Manufacturing oversight and Project handing over.
- Data Analysis on Retail Outlet location, Capital and Revenue Expenditure checked on Excel and Python achieving 20% reduction in overall budget.

Summer Intern at Hero Moto Corporation Limited, Gurgaon

May 2016 — July 2016

 Patented and designed an Engine Test Bench. This helped in delivering 100% quality certification on Engine Exports.

Projects

Design Lead at Electric Solar Vehicle Championship, Bhopal, India

January 2015 — July 2016

- Leadership and Budget responsibilities for 5 member Team.
- Design and Manufacturing of 1.2 Cd Drag Chassis for a Solar Operated
- Vehicle including Lightweight Alloys and highly ergonomic and safe rollcage.

Project Leader at Canard Missile Design, Bhopal, India

July 2016 — January 2017

 Designed Nose Profile(CATIA and Solidworks) for Canard type Missiles analyzing Mach profiles at Transonic Flows (ANSYS)

Bachelor Thesis: Exhaust Gas Recirculation, Bhopal

January 2015 — June 2015

- Prototyped an EGR for simulating real-time behaviour.
- Measured COx, NOx emissions using Exhaust Gas Analyzer under different Load conditions.

Courses

Introduction to Machine Learning in Python, Coursera

Artificial Neural Networks, Udemy

Engine and FI Technology, Bosch

Achievements

Gear Up for GMV, Bharat Petroleum Corporation Limited

July 2020

FINO payments Bank Limited's collaboration with BPCL has promoted banking at the village level. The innovative relationship between BPCL and FINO has simplified the distribution and handling of cash and made life easier for countless citizens.

Best Design Award, Electric Solar Vehicle Championship.

April 2016

Award for the best design for a solar-powered vehicle in a nationwide competition called ESVC in 2016. Across India, more than 150 universities participated, of which our design was rated best in the areas of safety, weight reduction, and ergonomics.