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Publications

[1] https://doi.org/10.1080/21681163.2020.1858968

[2] https://doi.org/10.1016/j.jmapro.2019.07.033

Skills

Python	Advanced
C/ C++	Intermediate
Java	Intermediate
MATLAB	Advanced
Siemens NX	Expert
ANSA	Intermediate
Ansys WB	Advanced
ABAQUS	Advanced
Radioss	Intermediate
Optistruct	Expert
Star-CCM+	Advanced
OpenFOAM	Advanced
Paraview	Advanced

Languages

German	A2
English	C2

Work Experience

Internship, Master Thesis — 10/2023 - 07/2024

Siemens Energy - Mülheim, Germany

Topic: Generative Design of a Premixing Passage for a Hydrogen Combustor.

- Mastered combustion simulation workflows using **Star-CCM+**, significantly enhancing process efficiency and automation with **Python** and **JAVA**.
- Conducted multiple **combustion** simulations to generate a dataset and trained an **AI** model to fit and augment this dataset without additional simulation runs.
- Implemented **Generative AI** toolchain to H2 combustion gas turbines, minimizing boundary layer flashback and improving performance.

Student Research Assistant — 08/2021 - Present

RWTH Aachen University

- Developed expertise in adjoint-based **topology optimization**, creating a workflow for passively coupled CHT cases in **OpenFOAM** and integrating **neural networks** to accelerate solver runtime.
- Optimized **MATLAB** program to generate Aerogel geometry, developed **C++** code for enhanced performance, and created **ABAQUS** input scripts for **FEM** simulation, improving efficiency and reliability.
- Improved VBA program for examination software and developed a **Python** based software to enhance functionality and user experience.

Internship - Thermo-mechanical Engineer, Battery — 02/2023 - 08/2023

Volocopter HQ - Bruchsal, Germany | *Reference Letter*

- Conducted **mechanical and thermal simulations** for CFRP parts and **battery packs** using Optistruct and StarCCM+.
- Analyzed and improved eigenfrequencies of battery packs through modal simulations.
- Investigated **thermal runaway** stresses and strains for various configurations, ensuring compliance with EU standards.

Mini Thesis — 02/2023 - 08/2023

Digital Additive Production - RWTH Aachen University

- Developed a simulation-based **Neural Network** model for evaluating multi-purpose support structures trained on **OpenFOAM** simulations.
- Significantly reduced development time by eliminating setting up and simulation run times, providing substantial benefits to the development of cooling channels.

CAE Engineer — 03/2019 - 08/2020

Upwork

- Worked on various industrial projects, specializing in design, simulation, and toolchain development.
- Successfully delivered results on time-sensitive projects through effective collaboration with clients.

Education

M.Sc: Computer Aided Mechanical Engineering — 2020 - Present

RWTH Aachen University - Germany

Electives: Parallel Computing, AI for Engineers, Data Science, and Adv. C++.
Addl. Courses: Additive Manufacturing and Turbulent Flows.

B.Tech: Mechanical Engineering — 2015 - 2019

BML Munjal University - India

Addl. Courses: Computational Fluid Dynamics, Robotics, and Bio-Mechanics.