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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

Programming Languages

Python	Advanced
C/C++	Intermediate
Java	Intermediate

CAD/ CAE Tools

Siemens NX	Expert
ANSA	Intermediate
ABAQUS	Advanced
Optistruct	Expert
Radioss	Advanced
OpenFOAM	Advanced
Star-CCM+	Advanced
Ansys	Advanced
Paraview	Advanced

Languages

English - C2 **German** - A2

Work Experience

Internship, Master Thesis — 10/2023 - 07/2024
Siemens Energy - Mülheim, Germany
Topic: Generative Design of a Premixing Passage for a Hydrogen Combustor.

- Developed combustion simulation workflows using **Star-CCM+**, automating processes with **Python** and **Java** to streamline operations.
- Conducted combustion simulations and trained an **AI model** to augment datasets, allowing for advanced analysis without additional simulations.
- Integrated **Generative AI** toolchains for hydrogen combustion gas turbines, focusing on minimizing boundary layer flashback and optimizing performance.

Student Research Assistant — 08/2021 - 12-2024
RWTH Aachen University

- Created adjoint-based **topology optimization** workflows for coupled heat transfer cases in **OpenFOAM**, incorporating **neural networks** to accelerate solver runtimes.
- Enhanced a **MATLAB** program for generating aerogel geometries, transitioning to **C++** for improved performance and accuracy.
- Upgraded a VBA-based exam management system, developing a **Python** program to expand functionality and improve user experience.

Internship - Thermo-mechanical Engineer, Battery — 02/2023 - 08/2023
Volocopter HQ - Bruchsal, Germany | *Reference Letter*

- Performed **mechanical and thermal simulations** on CFRP parts and **battery packs** using Optistruct and Star-CCM+, improving structural performance.
- Conducted modal analysis to optimize eigenfrequencies, enhancing the stability of battery packs.
- Investigated **thermal runaway** stresses for different battery configurations, ensuring compliance with EU safety standards.

Mini Thesis — 02/2023 - 08/2023
Digital Additive Production - RWTH Aachen University

- Designed a **Neural Network**-based evaluation model for multi-purpose support structures, reducing the need for manual setup through automation.
- Accelerated the development of cooling channels by utilizing neural network evaluations, streamlining the design process.

CAE Engineer — 03/2019 - 08/2020
Upwork

- Provided **design**, **simulation**, and **toolchain development** services across multiple industrial projects, delivering results within tight deadlines.
- Collaborated with clients to refine product designs and implement CAE analysis to meet project specifications.

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

Electives: Computational Fluid Dynamics, Robotics, and Bio-Mechanics.