**Sreekar Reddy Sajjala**

*Mechanical Engineer Blending CAE & AI Expertise to Drive R&D Advancements*

Aachen, Germany

*[sreekar2858@gmail.com](mailto:sreekar2858@gmail.com)*

*[linkedin.com/in/sreekar2858](https://www.linkedin.com/in/sreekar2858)*

*[sreekar2858.github.io](https://sreekar2858.github.io/)*

# Work Experience

Siemens Energy Mulheim an der Ruhr, Germany  
Aero-design Engineer [Internship + Thesis] Oct 2023 - Jul 2024

* Objective: Minimize boundary layer flashback in a 100% **hydrogen** fueled industrial **gas turbine** using **Generative AI**
* Collaborated with cross-functional teams to develop an AI model that predicts **combustion** results, achieving a 95% match with full-scale simulations
* **Automated Star-CCM+** combustion workflows using **Python** and **Java**, cutting simulation runtimes by 12x (from hours to minutes) and accelerating design iterations
* Successfully deployed **two generative AI** models on cloud to create novel design configurations, effectively reducing flashback propensity to below 5%

RWTHAachen, Germany  
Graduate Student Research Assistant Aug 2021 - Dec 2024

* Created an adjoint-based topology optimization solver in **OpenFOAM** for thermal **CFD** and integrated **surrogate AI** model cutting the solver runtime from ~3hrs to ~6secs
* Implemented a parallel DLCA algorithm in C++ for **aerogel** geometry creation, achieving over 3x performance improvements with better accuracy. **Automated** **FEM** simulations on ABAQUS with python scripts
* Modernized **examination software** by migrating it to **Python**, significantly enhancing functionality and user experience

[Volocopter GmbH](https://sreekar2858.github.io/assets/pdf/Volocopter_Ref.pdf)↗ Bruchsal, Germany  
Thermal/ Thermo-Mechanical Engineer [Intern] Feb 2023 - Aug 2023

* **Optimized** CFRP components and **battery pack** using high-fidelity simulations, achieving weight reduction and improved **thermal efficiency** with **Optistruct** & **STAR-CCM+**
* Enhanced battery pack stability and vibration resistance by refining natural frequencies through **modal analysis**, lowering deviation by 7Hz
* Advanced safety and regulatory compliance by assessing **thermal runaway** stresses across multiple battery configurations that align with EU regulations

Digital Additive Production Aachen, Germany  
Academic Researcher Jun 2022 - Feb 2023

* Aim: Design a topology-agnostic **Graph Neural Network** (GNN) model to predict flow fields with accuracy analogous to **OpenFOAM** simulations
* Derived a GNN architecture for **3D flow field** prediction on tetrahedral and hexahedral meshes, ensuring geometry independence
* Reduced error rates by 18% through **hyperparameter tuning**, enhancing model generalization and reliability
* Achieved 92% accuracy, with predictions close to high-fidelity turbulent flow simulations

UpworkRemote  
CAE Engineer Mar 2019 – Aug 2020

* Spearheaded design, simulation, and **toolchain** development for 28 industrial projects, consistently meeting tight deadlines
* Collaborated with clients all across the world to refine product designs and CAE analysis (**FEM, CFD, and FSI**), ensuring solutions met precise project specifications

# Skills

## Design & Simulation Software

Siemens NX, Catia, HyperMesh, ABAQUS, NX-TMG, OpenFOAM, Star-CCM+, Ansys Mechanical/ Fluent/ CFX

## Programming Languages

Python, C/ C++, JAVA, MATLAB, VBA

## Libraries & Frameworks

PyTorch, TensorFlow, Scikit-learn, OpenCV, MLflow, Hadoop  
Git, Docker, Kubernetes, Jenkins,   
Linux HPC, Azure ML

# Publications

[Patient-specific CFD simulation of aerodynamics for nasal pathology: A combined computational and experimental study [DOI]](https://doi.org/10.1080/21681163.2020.1858968)

[CFD simulation of direct chill casting process of magnesium alloy billets [DOI]](https://doi.org/10.1016/j.jmapro.2019.07.033)

# Education

RWTH Aachen University

[Master of Science in Computer-Aided Mechanical Engineering](https://www.rwth-aachen.de/cms/root/studium/vor-dem-studium/studiengaenge/liste-aktuelle-studiengaenge/studiengangbeschreibung/~dfvw/computer-aided-conception-and-production/?lidx=1)

# Languages

English Fluent (C2)

German B1 Actively Improving

# Extra-Curricular

* Hackathon winner ICNAP: Schaffler AG
* Team Lead ENKRC, Eco-Kart, BAJA
* Top 30 OpenCV Perspective Challenge