SREEKAR REDDY **SAJJALA**

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https://sreekar2858.github.io/cv/

Skills *

C

C++

Python

MATLAB

Siemens NX

ANSA

Ansys

ABAQUS

Optistruct

Star-CCM+

OpenFOAM

Languages

German *A2*

English *C2*

Process-driven professional with expertise in theoretical and computational mechanics and AI integration. Skilled in optimizing engineering workflows and applying innovative solutions using advanced algorithms and AI. Strong background in CFD, FEM, and thermal simulations to enhance efficiency and performance.

Work Experience

Student Research Assistant — **02/2023 - Present**

Digital Additive Production DAP - RWTH Aachen

- Gained expertise in adjoint-based **topology optimization** methods.
- Developed a workflow for passively coupled topology optimization in **Conjugate Heat Transfer (CHT)** cases using OpenFOAM.
- Successfully integrated **Neural Networks** in the topology optimization solver to accelerate the run time.

Internship + Master Thesis — **10/2023 - 07/2024**

Siemens Energy - Mülheim, Germany

Topic: **H2 Combustor** development using **Generative Design Toolchain**.

- Mastered Siemens Energy's advanced workflow for combustion simulations and automation, enhancing process efficiency.
- Implemented generative design workflows, optimizing engineering solutions.
- Applied the toolchain to H2 combustion gas turbines, minimizing boundary layer flashback and improving performance.

Internship [Voluntary] — **02/2023 - 08/2023**

Volocopter HQ - Bruchsal, Germany

- 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 standards.

Mini Thesis — **05/2022 - 01/2023**

Digital Additive Production DAP - RWTH Aachen

- Developed simulation-based Neural Network model for evaluating cooling channel designs in **Additively Manufactured (AM)** components.
- Conducted **Conjugate Heat Transfer (CHT)** simulations of cooling channels using **OpenFOAM**.
- Reduced development time by eliminating tedious case setups and long simulation run times, benefiting industries reliant on heat conduction and convection.

Student Research Assistant — **05/2022 - 08/2022**

Chair of Continuum Mechanics - RWTH Aachen

- Optimized/ cleaned-up **MATLAB** code to generate Aerogel geometry and developed partial C++ code for better performance.
- Created input scripts for **ABAQUS** for FEM simulation of Aerogel.
- Assisted in improving simulation accuracy and efficiency.

Student Research Assistant — **02/2022 - 01/2023**

Chair of Thermodynamics of Mobile Energy Conversion Systems - RWTH Aachen

- Optimized and debugged Visual Basic (VBA) code for examination software.
- Developed a Python GUI software using PyQt5.
- Enhanced software functionality and user experience.

Certifications & Training

- **Siemens NX**
- **The Finite Element Method for Problems in Physics**
- **Robotics**
- **StarCCM+ Battery Thermal Study**
- **Aerodynamics**
- **Turbulent Flows**
- **Topology Optimization for Additive Manufacturing**

CAE Engineer **03/2019 - 08/2020**

Upwork

- Successfully completed 18 research projects focused on Computer-Aided Design (CAD), Finite Element Method (FEM), Computational Fluid Dynamics (CFD), and Fluid-Structure Interaction (FSI).
- Utilized various software tools including Siemens NX, Ansys, ABAQUS, COMSOL, and MATLAB for designing and conducting simulations.
- Applied expertise in CAD software to develop precise and efficient designs, ensuring accuracy and functionality. Employed advanced simulation techniques to achieve optimized performance and reliability.

Research Scholar **01/2019 - 06/2019**

IIT Madras - Chennai, India

- Developed a custom C++ solver in **OpenFOAM-v1712**.
- Investigated thermal, momentum, and phase-fraction evolution at different casting speeds to identify optimum parameters for best casting quality.
- Employed **Ansys Mechanical APDL** to study creep during casting process.

Education

Master of Science: Computer Aided Mechanical Engineering **2020 - Present**

RWTH Aachen University - Germany

Courses: Nonlinear Structural Mechanics, Advanced Finite Element Methods, Advanced Software Engineering, Artificial Neural Networks in Structural Mechanics, Practical Introduction to FEM, Computational Fluid Dynamics, Parallel Computing for Computational Mechanics.

Bachelor of Technology: Mechanical Engineering **2015 - 2019**

BML Munjal University - India

Bachelor's Thesis: Computational simulation of convectional and ultrasonic techniques in Direct-chill casting of Aluminum alloys.
Mini-project: Study of flow and alloy segregation during solidification of Aluminum alloys.
Courses: Computer programming in C, Computational Fluid Dynamics, Machine Design, Manufacturing Process, Mechanical Vibrations, Robotics, Bio-Mechanics, Micro Machining, Nanoscience: From synthesis to few applications.

Publications

- Nazym S. Sagandykova, et al., (2021) Patient-specific CFD simulation of aerodynamics for nasal pathology: a combined computational and experimental study, Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization, 9:5, 470-479, https://doi.org/10.1080/21681163.2020.1858968
- LeeWei Loon, et al., (2019) CFD simulation of direct chill casting process of magnesium alloy billets, Journal of Manufacturing process,Volume 45, 447-454, https://doi.org/10.1016/j.jmapro.2019.07.033