Sajana Ratnayake

Mechanical & Aerospace Engineer

sajanasr@gmail.com

(480) 434-8627

www.sajanasr.com

www.linkedin.com/in/sajanasr

Boulder, CO

EDUCATION

Master of Science in Mechanical Engineering
Arizona State University | December 2023

Master of Science in Aerospace Engineering
Arizona State University | May 2020

Bachelor of Science in Mechanical Engineering
Arizona State University | May 2019

SKILLS

Programming: Python, C++, MATLAB, Simulink
CAD: SolidWorks, Fusion 360
Simulation: ANSYS, OpenFOAM, VORLAX
Testing & Analysis: JMP, Audio Precision, HBK systems, Universal Robots, Microsoft Excel
Methods: Test automation, data analysis, Six Sigma methodology

PUBLICATIONS

Low Aspect Ratio High-Lift Wing Design for Automotive Racing Applications
https://doi.org/10.2514/6.2023-4311
AIAA, 2023

New Approaches to Direct Wing Shape Synthesis using Potential Flow Solvers
https://doi.org/10.2514/6.2022-0547
AIAA, 2022

An Improved Synthesis Method to Develop Conceptual Design Wing Lofts
https://doi.org/10.2514/6.2021-0218
AIAA, 2021

RELATED COURSEWORK

Fluid Mechanics
Rocket Propulsion
Aircraft Propulsion
Design Optimization
Multi-Robot Systems
Six Sigma Methodology
Advanced Aerodynamics
Design Engineering Experiments
Applied Computational Fluid Dynamics

SUMMARY

Mechanical and Thermal Engineer with experience in thermal, mechanical, audio, and acoustic validation, specializing in test automation, test development, and engineering data analysis. Former aerodynamics researcher with experience designing and analyzing Formula 1 and aircraft wings with emphasis on optimization algorithms, potential flow solvers, CAD modeling, CFD solutions and data analysis.

EXPERIENCE/PROJECTS

Mechanical/Thermal Test Engineer II **HP/Akkodis** | Fort Collins | October 2024 - Present
Conduct testing of HP Dimension devices in collaboration with Google and develop improved methodologies to generate reliable, high-accuracy data that informs system design decisions and enhances overall performance and reliability.

- Develop and execute thermal, mechanical, acoustic, and audio tests to verify performance against system requirements.
- Automate test execution, data collection, data analysis, and report generation using Python, improving test consistency and reducing repetitive engineering labor.
- Prepare technical reports and presentations communicating test methodology, uncertainty, results, risks, and recommended corrective actions leading to program level changes and subsystem level improvements.
- Collaborate with cross-functional and geographically distributed teams to plan tests, investigate failures, identify root causes, and support product design decisions.

Lead Quality Engineer/CFD Analyst **PurcellAI/ASU** | Remote | July 2024 - October 2024
Conducted fluid dynamics studies to verify particle deposition at target areas after inhalation and ensured ISO standards were maintained during the development of smart inhalers and medical diagnostic devices.

- Guided a team of 40 engineers to ensure that ISO standards were being maintained during the development of smart inhalers and medical devices.
- Modeled human airways using SolidWorks and analyzed airflow and particle deposition using OpenFOAM to treat asthma and COPD.

Graduate Researcher **ASU**| Arizona | December 2019 - December 2023
Utilized potential flow solvers (VORLAX) and superposition principles to rapidly synthesize Formula 1 racecar wings and aircraft wings by automating the design process to achieve assigned lift and pressure conditions.

- Automated the analysis of thousands of aerodynamic data points per solution using Microsoft Excel to achieve required performance conditions.
- Conducted simulations using VORLAX and formatted results for data processing.
- Developed a Python tool that reduced VORLAX input-file generation time to a few seconds.
- Modeled racecar wings in SolidWorks and analyzed their aerodynamic performance in ANSYS to validate the design algorithm.

Graduate Teaching Assistant **ASU**| Arizona | May 2019 - December 2023
Taught classes varying between Introduction to Engineering, Engineering for Humanity, Mechanical Engineering Design and Engineering Profession to educate freshmen through seniors in college.

- Instructed and mentored over 1,000 undergraduate students in mechanical design, engineering fundamentals, prototyping, manufacturing, testing, and ethics.
- Trained students and faculty in the safe operation of shop tools and laboratory equipment, including drills, saws, multimeters, oscilloscopes, power supplies, and illuminance meters.

Mechanical Technician **Mercedes-Benz/DIMO**| Sri Lanka | May 2017 - July 2017
Serviced Mercedes-Benz vehicles and advised customers to ensure safe and optimal running of vehicles.

- Diagnosed and repaired automotive mechanical systems, including engines, suspension, cooling, exhaust, and fuel-delivery components.
- Used Mercedes-Benz STAR Diagnostic equipment to identify faults and support corrective maintenance.
- Collaborated with a five-person technician team to complete daily vehicle diagnostics, maintenance, and repair assignments.