RITHWIK SHANKAR RAJ

GRADUATE STUDENT

° EMAIL °

rithwikshankarraj@gmail.com

° LINKS °

LinkedIn ID

Home page

° SKILLS °

CAD Tools (SolidWorks, CATIA, Fusion 360 and SolidEdge).

CAE and Simulation Software (ANSYS and COMSOL).

Open Source Simulation Software (OpenFOAM and Salome).

Coding Languages (C, C++, Python and MATLAB).

Linux, MacOS and Shell Scripting.

Non-traditional Machining Processes (ECDM) and Additive Manufacturing.

Project Management.

Good Communication and Leadership Skills.

° LANGUAGES °

English

Hindi

Sanskrit

Malayalam

Kannada & German
(Pre-Intermediate)

IELTS (dt. 24 Sep 2023) Score: 8.5

(L&R: 9; S:8.5; W:8)

PROFILE

As an engineer deeply immersed in the world of thermal and fluid sciences, I am passionate about using numerical simulations to push the boundaries of our understanding of fluid flow phenomena and their real-world applications. My research interests encompass propulsion, turbulence modelling, multiphase flow simulation, heat and mass transfer, compressible flow simulation, fluid system optimization, and turbomachinery. I firmly believe in a strong work ethic, adaptability, and creativity as the pillars of my professional journey.

WORK EXPERIENCE

Associate Engineer-Airframe at AIRBUS, Bangalore

July 2023 — June 2024

- Worked in Electrical Systems Installation within Physical Design and Integration perimeter.
- Well-versed in CAD software such as CATIA V5 for electrical systems design and manufacturing.
- Involved in end-to-end change management process and subcontractor management.
- Monitored quality assurance processes throughout the product lifecycle.

Intern Trainee at AIRBUS, Bangalore

March 2023 — June 2023

- Introduced to basics of aircraft systems design.
- Worked on optimization of EWIS for More Electric Aircraft.
- Performed coupled EMC and Thermal Analysis for cables to determine the optimum radius of the protection sleeve using COMSOL based on the FEM.
- Used MATLAB Fuzzy logic, SOLIDWORKS API, and Python to automate the routing process of sensitive wiring systems near the fuel lines.
- Designed and manufactured a prototype novel clamp for electrical and mechanical systems.

Research Intern at Indian Institute of Science (IISc), Bangalore

July 2022 — July 2023

- Member of the Electric Vehicle Take-Off and Landing (eVTOL) Propulsion Team at NMCAD Lab, Department of Aerospace Engineering, IISc.

Project Intern at AIRBUS, Bangalore

June 2022 — July 2022

- Worked under the Systems Modelling discipline on the design of Functional Mock-Up Units (FMUs) using MATLAB, SIMULINK and open-source tools including PyFMU.
- Developed a sample SIMULINK FMU for Engine Gas Dynamics and implemented the same using open-source PyFMU.

Project Intern at Bosch Rexroth, Bangalore

September 2021 — October 2021

- Industrial internship conducted by the Center of Competence in Automation Technologies in industrial applications of geometrical dimensioning and tolerancing (GDT) and learnt the basics.
- Designed solid rocket motor static fire test stand using appropriate GDT principles in SOLIDWORKS.

Senior Propulsion Engineer at Team ANTARIKSH, RVCE, Bangalore

October 2019 — June 2023

- Performed simulations of the thermal casing of solid rocket motor using COMSOL.
- Performed selection of sensors and propellant, design, and CFD analysis of rocket nozzle using ANSYS FLUENT and OpenFOAM.
- Designed a Vertical Takeoff and Landing System for model rockets.

EDUCATION

Bachelor of Engineering (Hons.) in Mechanical Engineering, RV College of Engineering (RVCE), Bangalore

August 2019 — August 2023

- First Class with Distinction *(CGPA of 9.33, out of 10)*.
- Secured third rank among 152 students of B. E. Mechanical Engineering.
- Participated in several inter-school & intercollegiate badminton competitions.
- Participated in several social service programs and marathons organized by RVCE and taught underprivileged students.
- Participated in several design thinking competitions and hackathons.
- *GRE test (dt. 25 Nov. 2023) scores: Quantitative: 167; Verbal: 160; AW: 5.0.*

Class XII, CMR National Public School (CMR NPS), Bangalore

May 2017 — May 2019

- Subjects: Mathematics, Physics, Chemistry, Computer Science and English *(91.4% Marks)*.
- Participated in the second round of the International Mathematics Olympiad.
- Certificate of Merit, Inter-house music competition, CMR NPS – 2017.

Class X, Kendriya Vidyalaya N. A. L. Campus, Bangalore

April 2017

- Subjects: English, Mathematics, Science, Social Science and Sanskrit *(CGPA: 10 out of 10)*.
- Participated in the second rounds of National Science Olympiad and International Mathematics Olympiad.
- Certified ***Junior Artist in Hindustani classical*** *music (**Tabla** instrument)* by the Karnataka Secondary Education Examination Board, Government of Karnataka, India. Given several *live* performances.
- Participated in *under-17 Badmintons, Regional Sports Meet*, KVS-India

PROJECTS

- Transient CFD Simulation of Reaction Turbines using OpenFOAM.
- Analysis of Supersonic Flow Over Double Wedge using ANSYS FLUENT.
- Simulation of Fluid Flow Through a Porous Medium Using MATLAB.
- Coupled Steady State Thermal and Structural Analysis of Gas Turbine Stator Blades.
- Material Selection and Frame Design of E-Bikes.
- Forging Simulation of Connecting Rod.
- MATLAB Simulation of Finite Well Potential.
- Development of a Thermoacoustic Heat Engine Setup.

PUBLICATIONS

Book Chapter

J. Ranganayakulu, P. V. Srihari, K. V. Rao, *Rithwik Shankar Raj* and M. Mahajanshetti, (2023). Machining Strategies for Micromachining of Glass Using Electrochemical Discharge Machining: A Review. Chapter 6, In: Innovative Development in Micromanufacturing Processes. Eds. Pawan Kumar Rakesh and J. Paulo Davim, CRC press, Taylor & Francis Group, LLC. pp 132-153. DOI: https://doi.org/10.1201/9781003364948-6

Manuscript Submitted

Rithwik Shankar Raj, J. Ranganayakulu and P. V. Srihari, (2024). An Integrated Approach for Parametric Optimization of Routing in More Electric Aircraft. *Journal of the Institution of Engineers: Series C* (*under review*).

AWARDS AND ACCOMPLISHMENTS

- Awardee, the prestigious ***National Inspire Award****-2014* of the Department of Science & Technology (DST), Government of India.
- Winner of ***First Prize*** **in** ***Test of Scientific Temper in the national competition*** conducted by U. R. Rao Satellite Centre, Indian Space Research Organization (ISRO), Government of India in 2017.
- Recipient of ***Certificate of Appreciation*** in 21st National Children's Science Congress, DST, Government of India – 2013.
- Recipient of `***Best Outgoing Student, B. E. Batch of 2023***', a certificate of appreciation by R V College of Engineering for exemplary academic, research and all-round performances.

- Awardee, **Best Student Award** 2012-13 by Kendriya Vidyalaya N.A.L. Bangalore, among class-1 to class-10 students.

♠ COURSES

I. Indian Institute of Technology (IIT) – Kharagpur NPTEL course

1. **Computational Fluid Dynamics (Jul-Oct 2023)**

Awarded Elite, Topper with score of 95%

2. **Advanced Fluid Mechanics (Jul-Oct 2022)**

Awarded Elite + Silver Certificate

3. **Energy Conservation and Waste Heat Recovery (Jul-Oct 2022)**: Awarded Elite + Silver, Topper Certificate

II. Indian Institute of Technology (IIT) – Kanpur NPTEL course

4. **Metal Additive Manufacturing (Jul-Oct 2022)**

Awarded Elite + Silver Certificate

5. **Product Design and Manufacturing (Jan-Apr 2022)**

Awarded Elite + Silver, Top 5% Topper Certificate

6. **Rapid Manufacturing (Jul-Oct 2021)**

Awarded Elite + Gold, Top 2% Topper Certificate

III. Indian Institute of Technology (IIT) – Madras NPTEL course

7. **Rocket Propulsion (Jan-Apr 2022)**

Awarded Elite + Silver Certificate

8. **Scientific Computing using MATLAB (Jan-Apr 2022)**

Awarded Elite + Silver Certificate

IV. Online course offered by University of Michigan

9. **Introduction to Thermodynamics: Transferring energy from here to there**

V. Online course offered by University of Colorado Boulder

10. **Fundamentals of Macroscopic and Microscopic Thermodynamics**

VI. Online course offered by The Hong Kong Univ. of Sci. & Tech.

11. **Vector Calculus for Engineers**

VII. Online course offered by Vanderbilt University

12. **Introduction to Programming with MATLAB**