

RITHWIK SHANKAR RAJ

GRADUATE STUDENT, GEORGIA INSTITUTE OF TECHNOLOGY, ATLANTA, USA ☎ (+1) 404-618-9258

👤 PROFILE

◦ DETAILS ◦

Date of birth: 26 January 2001

Nationality: USA

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As an engineer deeply engaged in the study of turbulent combustion and high-fidelity simulations, I am passionate about advancing our understanding of complex fluid flow phenomena through numerical modeling. My research focuses on large-eddy simulation (LES), turbulence–chemistry interaction, and multiphase flow modeling, with applications in propulsion and energy systems. I firmly believe in a strong work ethic, adaptability, and creativity as the pillars of my professional journey.

📁 WORK EXPERIENCE

◦ LINKS ◦

[LinkedIn ID](#)

[Home page](#)

◦ SKILLS ◦

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

CAE and Simulation Software (ANSYS, CHEMKIN, COMSOL).

Open Source Simulation Software (OpenFOAM, Cantera).

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

Linux, MacOS and Shell Scripting.

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

Project Management.

Leadership Skills.

Graduate Research Assistant at Computational Combustion Laboratory (CCL), GaTech January 2025 — Present

- Modeling near-wall and sub-surface phenomena and developing wall models for LES of solid-fuel ramjet (SFRJ) combustion
- Develop custom codes that model transient multiphase phenomena in solid-fuel combustion using Cantera/CHEMKIN with Python, C++ and FORTRAN.

Associate Engineer-Airframe at AIRBUS, Bangalore

July 2023 — June 2024

- Worked in Electrical Systems Installation within Physical Design and Integration perimeter on AIRBUS A320/321 with Multi-Functional Teams in Hamburg and Bremen.
- Well-versed in CAD software such as CATIA V5. Involved in end-to-end change management process, subcontractor management and monitoring quality assurance.

Intern Trainee at AIRBUS, Bangalore

March 2023 — June 2023

- Worked on optimization of EWIS for More Electric Aircraft and aircraft system design.
- 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

◦ LANGUAGES ◦

English

Hindi

Sanskrit

Malayalam

German & Kannada
(Pre-Intermediate)

IELTS Score: 8.5

(dt. 24 Sep 2023)

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

GRE Test Scores

(dt. 25 Nov. 2023)

Quantitative: 167

Verbal: 160

AW: 5.0

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

MS in Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, USA

August 2024 - Present

- MS with a thesis focused on high-fidelity Large Eddy Simulation (LES) of turbulent combustion in solid fuel ramjets (SFRJs)
- GPA: 4.00

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

August 2019 — August 2023

- Awarded 'Best Outgoing Student, B. E. Batch of 2023', by RVCE for exemplary academic, research and extracurricular performances.
- First Class with Distinction (CGPA of 9.33, out of 10).

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

May 2017 — May 2019

- Subjects: Mathematics, Physics, Chemistry, Computer Science and English (91.4% Marks).
- Participated in the second rounds of National Science Olympiad and the International Mathematics Olympiad.

Class X, Kendriya Vidyalaya NAL Campus, Bangalore, India

April 2017

- Subjects: English, Mathematics, Science, Social Science, Sanskrit, German, Computer Science (CGPA: 10 out of 10).

★ PUBLICATIONS

1. Rithwik Shankar Raj, Achyut Panchal and Suresh Menon, (2025). *Modeling Sub-surface Processes within a Solid Fuel Ramjet*. AIAA SCITECH 2026 Forum (Accepted)
2. Rithwik Shankar Raj, Ranganayakulu, J. and P. V. Srihari, (2025). *An Integrated Approach for Parametric Optimization of Routing in More Electric Aircraft*. *Journal of the Institution of Engineers: Series C* (under review).
3. Rithwik Shankar Raj, Bagi, N., Ranganayakulu, J., Bharatish, A. and Rao, K.V. (2025). *Parametric Optimization in Electrochemical Discharge Machining of Microchannel on Glass Using Multiple Tool Passes*. In *Advanced Machining and Micromachining Processes* (eds S. Kunar, N.B. Talib and G. Mandal). <https://doi.org/10.1002/9781394301744.ch22>
4. Ranganayakulu, J., 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. P. K. Rakesh and J. P. Davim, CRC press, Taylor & Francis Group, LLC. pp 132-153. DOI: <https://doi.org/10.1201/9781003364948-6>.

AWARDS

- **Best Outgoing Student, Bachelor of Engineering Batch of 2023** of RV College of Engineering for exemplary academic, research and extracurricular performances, in 2023.
- **1st Prize in Test of Scientific Temper in the national competition** conducted by U. R. Rao Satellite Centre, **Indian Space Research Organization**, Government of India, 2017.
- The prestigious **National Inspire Award** of the Department of Science & Technology (DST), Government of India, in 2014.
- **Certificate of Appreciation** in 21st National Children's Science Congress of the Department of Science & Technology (DST), Government of India, in 2013.
- **Best Student Award** of Kendriya Vidyalaya N.A.L. (among class-1 to class-10 students of 2012-13 academic year), Bangalore, India, in 2013.

- Selected for two *internship* programs (June - July 2022; March - June 2023) of *Airbus Group India Pvt. Ltd.*
- Selected for 12-month research internship program of *Indian Institute of Science (IISc), Bangalore* in July 2022.

🐦 EXTRACURRICULAR ACTIVITIES

- **Certificate of Merit, Inter-house music competition**, CMR NPS – 2017.
- Certified **Junior Artist in Hindustani classical music (Tabla instrument)** by the Karnataka Secondary Education Examination Board, Govt. of Karnataka, India, in 2016.
- Participant, **under-17 Badminton event of Regional Sports Meet**, KVS-India in 2016.
- Won prizes in several interschool and intercollegiate *badminton competitions, design thinking competitions and hackathons*.
- Participated in several **social service programs and marathons** organized by RV College of Engineering.
- Involved in preparing study materials for Mathematics and English, and teaching high-school level students at *DIET Ramanagara*, a government initiative to provide quality education for underprivileged students.
- Participated in cleaning up Government school in Hosakote, Karnataka State, India, *in association with an NGO*.
- Participated in several interschool and intercollegiate *Mathematics and Science Expos and Science Quiz competitions*.
- Participated in the *national level DST-INSPIRE award science exhibition* in 2014.
- Won prizes in several interschool *essay writing, poem writing and story writing competitions*

◦ PREVIOUS 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.

♠️ ADDITIONAL GRADUATE LEVEL 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**