Reghuram Kesavan

MECHANICAL ENGINEER
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Professional Profile

Motivated and technically versatile Aerospace Engineering graduate student at the Technical University of Munich (TUM) with hands-on experience in composite structures, aerospace systems design, and mechanical testing workflows. Proven background in structural validation of CFRP sandwich joints, evtol battery integration, and distributed electric propulsion concepts. Skilled in Siemens NX, Simcenter FEA, Ansys Fluent, Teamcenter PLM, and GD&T, with strong capabilities in FEA, CAD modeling, and CFD analysis. Industry experience includes internships at Lilium eaircraft gmbh and Feynman Aerospace, as well as R&D contributions to WARR Rocketry. Adept at executing multi-disciplinary projects, preparing technical documentation (trqs/trs), and applying additive manufacturing and non-destructive testing (GPR) in aerospace contexts. Actively seeking opportunities in structural design, systems engineering, or flight hardware development across the German and EU aerospace ecosystem.

Education Background

10/2023 – Ongoing
Master of Science in Aerospace (3rd Semester)
Technical University of Munich (TUM), Germany
Focus areas: Additive Manufacturing, Non-Destructive Testing, Aerodynamics, Composite Materials, Aircraft Performance & Propulsion, Aircraft and Spacecraft Design.

08/2018 – 08/2022
Bachelor of Technology (Honors) in Mechanical Engineering
APJ Abdul Kalam Technological University, Kerala, India
Focus areas: Fluid and Solid Mechanics, Thermodynamics, Material Science, Compressible Fluid Flow, Computer Aided Design and Analysis.
Thesis: Aerodynamics of Passenger Aircraft with Distributed Propulsion
Grade: ***9.28/10***

Technical Skills

Working Proficiency	Advanced Knowledge	Basics
SolidWorks/ NX Siemens	*MATLAB*	*Latex*
Team Center PLM	*Cura / PrusaSlicer*	*Simcenter*
Ansys Fluent	*Altair Hyper Works*	*RADAN 7*
Microsoft Office	*Python and C++*	*Arduino Programming*
Adobe Creative Suite	*XFLR 5 & X Foil*	*Open FOAM*
Conventional Machining	*CNC Machining*	*Star CCM+*

Work History

04/2024 – 11/2024
Lilium e-Aircraft GmbH
Aircraft Design Engineer Intern
lilium.com |Munich, Germany

- Contributed to the Cells Team within the Integrated Energy Systems Unit (IESU), supporting structural testing workflows for battery module assemblies. Managed documentation by preparing and maintaining Test Requests (TRQs) and Test Reports (TRs) in Teamcenter PLM, ensuring full traceability and compliance.
- Executed the complete validation loop for pull-out strength testing of self-tapping inserts in CFRP-Foam-FR4 sandwich structures — from initial research and test matrix development to designing a pressure test module and finalizing test documentation.
- Developed battery module configurations for compression testing, analyzing cell expansion during charge–discharge cycles, and contributed to the design of base plates and UUT fixtures in Siemens NX with GD&T for test-lab readiness.

10/2023 – 04/2024
WARR Rocketry Club TUM
Mechanical Engineer
warr.de |Munich, Germany

- Collaborated with the Aerostructures Team to enhance the structural performance of CFRP LOX/Ethanol tanks in the EX-4 launch vehicle, focusing on laminate integrity, gas diverter compatibility, and tank redesign.
- Contributed to the structural redesign of critical fluid interfaces for safe composite pressure vessel integration under mission-specific loading conditions.
- Ensured effective communication across a multilingual, international team for consistency and accurate documentation.

04/2023 – 10/2023
Feynman Aerospace LLP
Aircraft Design Intern
feynmanaerospace.com |Mumbai, India

- Designed a high aspect-ratio RC aircraft with optimized weight distribution and aerodynamic efficiency.
- Performed airfoil selection and lift–drag simulations using XFLR5 and X-Foil; developed the 3D model in SolidWorks, achieving a 5% improvement in aerodynamic performance.
- Delivered a 25-page technical report, presenting validated design insights to the engineering team.

04/2020 – 05/2020
Kerala Minerals and Metals Limited
Industrial Operation Intern
kmml.com |Kerala, India

- Assisted in evaluating the surface treatment processes at the Titanium Sponge Plant.
- Supported in the assembly procedure and maintenance of a twin-cylinder compressor system.
- Led a team to prepare a 15-page technical document detailing plant processes and system operations and suggested improvements.

Projects

12/2024 –04/2025
Term Project: Mechanical Testing and Optimization of Design Solutions for Load

Introduction Points in Lightweight Sandwich Panels with Plastic Frame

- Performed quasi-static pull-out and in-plane shear testing of self-tapping inserts in CFRP-Foam-FR4 sandwich panels using a Shimadzu UTM.
- Designed fixtures and inserts in NX CAD evaluating the effect of pilot hole size, thread type, fiber orientation, and joint behavior across 12 configurations using LOCTITE adhesives
- Developed a calibrated nonlinear FEM using Simcenter FEA, applying orthotropic laminate definitions and cohesive zone modeling to replicate experimental load-displacement behavior.
- Project targeted the structural design of battery module compression plates for an eVTOL aircraft in academic collaboration with Lilium GmbH (under NDA).

09/2024 –10/2024

Non-Destructive Testing Project: Subsurface Defect Mapping Using GPR

- Executed inspection of concrete using GSSI Structure Scan Mini XT (GPR), calibrating dielectric properties via backwall referencing and collecting scan data across 64 paths.
- Processed signals in RADAN 7 to generate time-corrected B- and C-scan profiles, detecting and sizing a ~40 cm foam defect at ~5 cm depth, verified by TOF and permittivity methods.
- Performed system accuracy analysis through deviation metrics and identified key limitations such as moisture variation and antenna drift.

04/2024 –05/2024

Additive Manufacturing Project: Functional Prototyping

- Analyzed structural behavior of FDM-printed PLA cantilevers with five infill geometries using Cura and Prusa Slicer under two quasi-static loading conditions.
- Fabricated a span-optimized 3D-printed bridge and developed a PLA-based mobile vehicle, capable of transporting a full water bottle over a test track using integrated wheel-chassis elements.

10/2023 –01/2024

Spacecraft Design Project: Power Subsystem Architecture for LEO Mission

- Designed the end-to-end power architecture for an AI-based LEO debris-track satellite, covering generation, storage, and regulated distribution.
- Integrated Sparkwing arrays, EaglePicher Li-ion batteries, and GomSpace NanoPower P60; performed orbital energy balance.
- Authored a LaTeX-based technical report, detailing system modeling, sizing logic, and hardware selection rationale under mission constraints.

10/2023 –01/2024

Systems Engineering Project: Solar Power Plant

- Led complexity and stakeholder analysis for a grid-integrated solar plant using MBSE principles.
- Conducted economic and technical risk assessments; coordinated deliverables using Gantt charts and project management workflows for timeline control.
- Compiled findings into a structured report and delivered technical presentations summarizing design trade-offs and system impact metrics.

06/2021 – 06/2022

Bachelor Thesis: Aerodynamics of Aircraft with Distributed Electric Propulsion

- Modeled a modified Boeing 737-800 with wing-mounted DEP units in SolidWorks and NX, replacing conventional turbofans.
- Performed CFD simulations in Ansys Fluent and HyperMesh to compare lift, drag, and wake profiles between baseline and DEP configurations.
- Investigated advanced winglet concepts and documented aerodynamic trade-offs in a LaTeX-compiled scientific report

06/2019 – 07/2019

Fraternity of Mechanical and Automotive (FMAE) Project: Baja ATV Design

- Engineered and assembled a Baja buggy frame with double-wishbone suspension, braking, and steering subsystems using SolidWorks.
- Oversaw jig setup, part machining, and final integration; validated mechanical layout against performance and safety.

06/2019 – 07/2019

IoT Based Project: Smart Medicine Box

- Developed a voice-controlled smart medicine box using Arduino Nano, with alarms, braille labels, and LCD interface.
- Programmed a Python-based mobile app with real-time scheduling and IoT connectivity for remote alerts and usage logging.

Achievements

Cultural and Sports

- Headed the dance team "Abrupt Family" to the Indian World of Dance Championship to represent Kerala state.
- Thiruvananthapuram district badminton champion of the year 2012.

Supervisory Accomplishments

- Aerospace Club Secretary - Cofounder of the aeromodelling and nanosatellite building team.
- Campus Ambassador - American Society of Mechanical Engineering (ASME), Indian Society for Non-Destructive Testing (ISNT).
- Event Coordinator - Technical Fest (ADVENT 22), Cultural Fest (CULTAWAY 22) with a footfall of four thousand.

National Conference On E-Mobility, Energy and Thermo-fluid System (EET-20)

- Coordinated this large-scale event conducted by the Mechanical Department, which had active participation from fifty-five colleges all over India.

Language Skills

Native Language: *Telugu*

English	German	Hindi	Malayalam	Tamil
C1	*A1*	*B2*	*B2*	*B2*