Gokula Krishna Tavva

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Personal Statement

I am a dedicated and research-driven Mechanical Engineering student with expertise in CAD design, computational simulations, and thermofluids. Passionate about aerodynamics and hypersonics, I aspire to contribute to cutting-edge aerospace research.

Education

Birla Institute of Technology and Science • Pilani, India — Oct 2022 – Present
Bachelor of Engineering • *Mechanical Engineering* • GPA: 9.08/10.0

Technical Skills

- **Designing:** SOLIDWORKS, Autodesk Fusion, Autodesk AutoCAD, OpenVSP, Altair Inspire
- **Simulation**: ANSYS Structural, ANSYS Fluent, OpenFOAM, Basilisk C, Simscale
- **Others**: MATLAB, Simulink, C Programming, Ardupilot

Projects

Flow analysis of a multi-stage dehumidifying chamber – BITS Pilani — Mar 2025 – Present
Pilani, India

- Project Advisor: Dr. Soni & Dr. Ranganayakulu
- Conducting simulations on a multi-stage conveyor-style dehumidifying system to optimize airflow and ensure output relative humidity stays within desired ranges.
- Analyzing results to identify potential design improvements for enhanced system efficiency and energy optimization.

Simulation study of lanced offset fins of Compact Heat Exchangers – BITS Pilani — Jun 2024 – Feb 2025
Pilani, India

- Project Advisor: Prof. Chennu Ranganayakulu
- This study aims to improve understanding of heat transfer using lanced offset fins by varying design parameters like the flow length, fin thickness, fin height, and fin spacing.
- The empirical correlations produced are **5%** more accurate than the previous studies.
- Computational simulations of various offset fin configurations will help us identify designs that maximize heat transfer while minimizing flow resistance, providing guidelines for more efficient thermal system designs.

Compact refrigeration system for the fishing boats – BITS Pilani — May 2024 – Aug 2024
Pilani, India

- Project Advisor: Prof. M.S Dasgupta
- Assisted in 3D modeling and improving the refrigeration system's compactness, manufacturability, and repairability for the Indo-Norway fishing industry project.
- Designed a boat-engine-powered refrigeration system using an evaporator drum to produce ice for optimal fish preservation until reaching shore.

Experimental study on PV cell performance with magnetic nanofluids – BITS Pilani — Jan 2024 – Dec 2024
Pilani, India

- Project Advisor: Prof. Suvanjan Bhattacharyya
- Designed and Fabricated a magnetic nanofluids (like Fe_3O_4) based solar PV cooling experimental setup.
- Initiated the validation of the experimental setup and aimed to improve the efficiency of the PV panels when compared to cooling water.

EV Battery thermal analysis using PCM and nanofluids under vibration – BITS Pilani — Jan 2024 – Dec 2024
Pilani, India

- Project Advisor: Prof. Suvanjan Bhattacharyya
- Designed a heat rejection system using Phase Change Materials and Nanofluids to efficiently manage battery and motor heat in vehicles, enhancing thermal performance and reliability.
- Optimized thermal management by incorporating the effects of vibrations on heat transfer dynamics, improving efficiency through heat absorption and reuse.

Publications

Vimana Aerotech and the development of a tail-sitter VTOL drone for research as well as commercial facilitation. – International Astronautical Federation — Oct 2024

- Co-author in the paper published in the proceedings of the 75th International Astronautical Congress in Milan, Italy.

Conferences

ICGTME – Department of Mechanical Engineering, BITS Pilani — Feb 2025

- Presented thermo-hydraulic correlations of the Colburn 'j' factor for offset strip fins in laminar and turbulent flow regimes at an international conference.
- Achieved the **Best** Presentation award **out of 134 papers**.

Work Experience

Simulation Engineer – Serendipity Space — Mar 2025 – Present
Munich, Germany

- Executing thermal simulations for a space payload designed to study pharmaceutical compound's quality and stability in zero-gravity conditions.
- Collaborating on developing reusable satellites with re-entry capabilities to return processed pharmaceutical compounds from space to Earth.

Undergraduate Teaching Assistant – BITS Pilani — Aug 2024 - Present
Pilani, India

- **Workshop Division** | Prof. Abhijeet K. Digalwar | Jan 2025 – Present | Responsible for preparing standard operating procedures and lab manuals for experiments conducted under 6 courses. I also assist students in their semester projects associated with manufacturing.
- **Applied Thermodynamics** | Prof. Suvanjan Bhattacharyya | Aug 2024 – Dec 2024 | Responsible for facilitating lab sessions, conducting and evaluating assessments, and performing invigilation duties. With **over 200** students enrolled, the course is a compulsory discipline course for mechanical engineering students.

Summer Intern – TATA Advanced Systems Limited — May 2024 – Jul 2024
Nagpur, India

- Initiated the improvement of fixture management practices by developing a color-code system. This system helps in efficient organization of the fixtures on the machine shop floor and assembly.
- Achieved **80%** reduction in the search time.
- Proposed ergonomic handles with improved grip for better handling in fixtures.

Flight Testing Engineer and CAD Designer – Vimana Aerotech — Sep 2023 – Jan 2025
Pilani, India

- Working on developing **Narsimha**, a tail-sitter drone that will be used extensively for surveying purposes and designed for long-duration flights of almost **4 times** that of conventional multi-copters with similar capacity and loads.
- The process utilizes rapid prototyping method, where we test each iteration after assembling the 3D-printed parts.
- Simultaneously, I am working towards designing custom 3D printed hatches, covers, and mounts for the body and motors for an in-house manufactured hexacopter, **Mantis**. Using CAD software, I am responsible for iterating various designs.

Mechanical Design Intern – Khageshvara Aviation Technology Pvt. Ltd. — Jul 2023 – Aug 2023
Pilani, India

- Developed foundational aircraft design skills using OpenVSP and researched technical criteria for UAV certification by the Ministry of Civil Aviation.

Extra Curricular Activities

Team Captain – Inspired Karters Gravity — Jun 2024 – Present

- Spearheading a team of **40**, focusing on designing and manufacturing a go-kart while managing budget allocation, drafting timelines, making key decisions, and securing sponsorships.
- Achieved an **All-India Rank 10** in the Electric Category at the **ISIE IKR** Competition.

Structural and Dynamics Engineer – Team BITS — Apr 2023 – May 2024

- Designed spaceframes for both Urban Concept Class (Ethanol-based) and Prototype Class (Electric) cars for Shell Eco-Marathon Asia-Pacific.
- Assisted in designing a lightweight carbon fiber shell for our prototype, achieving a **drag coefficient of 0.1**, reducing air resistance and enhancing performance.

Certifications

- **SOLIDWORKS CAD Design Associate (CSWA)** – Issued by Dassault Systèmes — Sep 2024

Competitions

Second position in CAD-a-thon, APOGEE-2023 – Issued by MEA - BITS Pilani — Mar 2023

- Achieved **2nd** place out of **93** teams for designing a multipurpose furniture model, optimizing key design parameters.