Anuranan Bharadwaj

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EDUCATION

Embry-Riddle Aeronautical University — Daytona Beach, FL
Bachelor of Science in Aerospace Engineering - Jet Propulsion — **May 2026**
Minor in Computer Science — **GPA: 3.9**
Courses: Structures| Materials| Aerodynamics| Thermodynamics| Jet Propulsion| Stability & Control| OOP| DSA

EXPERIENCE

Undergraduate Research Assistant — **May 2025 - Present**
Gas Turbine Lab – Embry-Riddle Aeronautical University — *Daytona Beach, FL*

- Developed a dynamic **Python-Excel integrated tool** to accurately calculate **turbine blade throat openings** and **deviation angles** using **Aungier's correlations** and **Mach-dependent flow effects**, improving precision through iterative **root-finding methods**.
- Validated computational results against **experimental data** and automated **multi-stage turbine parameter analysis** to support **design iteration** and **aerodynamic characterization**.
- Leading the design and **CAD modeling** of a custom horizontal **pitot rake** to enable **multi-point total pressure measurements** within the **turbine cascade rig**, facilitating **instrumentation upgrades** and efficient **airflow testing**.

C&DH Software Developer — **March 2025 - Present**
Project COMET – Embry-Riddle Aeronautical University — *Daytona Beach, FL*

- Designing and developing real-time flight software in **C** for a **12U CubeSat** featuring **mmWave inter-satellite communication**, contributing to a **scalable, low-latency space network architecture.**
- Building **modular applications** within **NASA's Core Flight System (cFS)** on **Ubuntu Linux** to control **satellite subsystem operations**, implement automated **fault-recovery algorithms**, and manage various **spacecraft modes**.
- Contributing to the design of a high-throughput (**500+ Mbps**) autonomous satellite communication system as part of **NASA's University Nanosatellite Program (UNP)** launch competition.

Systems Engineering Intern — **July – Aug 2024**
ABH Software — *Assam, India*

- Contributed to the development of a **modular business operations platform**, focusing on **systems architecture and process integration** for inventory control and customer workflow management.
- Engineered **automated data reporting pipelines** using **SQL** and **Java** to simulate real-time telemetry and logistics tracking systems, **reducing manual report processing by 30%** and **improving accuracy by 20%**.
- Collaborated cross-functionally to build **Java-based features** that streamlined processes using **Agile methodologies**.

PROJECTS

Aircraft Stability & Control Simulation | *MATLAB, DATCOM, Simulink, FlightGear, Excel* — **April 2025**

- Modeled a subsonic aircraft using **DATCOM** and **stability derivatives**, ensuring adherence to **lateral**, **longitudinal**, and **directional static stability** requirements.
- Developed a closed-loop flight simulation in **Simulink** and integrated with **FlightGear for 6-DOF visualization**.
- Validated **simulation accuracy with <3.5% deviation** from theoretical models, confirming static stability across.

Aircraft Wing Structural Analysis | *FEMAP, NX Nastran, Fusion 360* — **Dec 2024**

- Designed and modeled **a detailed wing structure** using **Fusion 360**, incorporating spars, ribs, stringers, and skin.
- Performed **finite element analysis** (FEA)in **FEMAP** with **NX Nastran** to evaluate stress, deflection, and load distribution under aerodynamic forces.
- Validated **mesh quality** (*Jacobian > 0.6*) and **maximum displacement of 0.15 in**, confirming structural efficiency.

SKILLS

Engineering Software: CATIA| FEMAP| NX Nastran| MATLAB| Fusion 360| Java| Python| HTML| CSS| JS| C#
Developer Tools: VS Code| Visual Studio| Git| PyCharm| Jupyter| Figma
Frameworks & Technologies: MERN| .NET| WPF| SQL| Pandas| Matplotlib| NumPy| Excel