Madhav Bhattarai (Raj)
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Objective/Summary:

Aerospace Engineering Student with experience in orbital mechanics and vehicle dynamics. Skilled in MATLAB and Simulink for dynamics modeling, simulation, and stability analysis. Strong problem solver with experience in translating theoretical concepts into practical tools for aerospace mission analysis and system evaluation.

EDUCATION:

University of Colorado at Boulder Expected May 2026
Bachelor of Science, Aerospace Engineering

Related Coursework:
Experimental and Computational Methods, Thermodynamics, Aerodynamics, Aerospace Structures, Aircraft Dynamics, Attitude Dynamics and Orbital Mechanics, Electronics and Communications, Foundations of Propulsion

SKILLS:

Technical: C++, MATLAB , Simulink, Python, OpenVSP, SolidWorks, Flow Simulation, Data Validation
Professional: System Integration, Technical Communication, Cross-team Collaboration, Leadership
Language: Fluent in English & Nepali

PROJECTS AND EXPERIENCES:

University of Colorado Boulder, College of Engineering and Applied Sciences - Stampede Sky Boulder, CO
Flight simulation and Modeling Lead *August 2025 - Present*

- Lead a group of engineering students to develop a high fidelity dynamics and performance model for a future mid range passenger aircraft, supporting a 40 student multi disciplinary capstone program.
- Performed stability and dynamics analysis, including preliminary validation against a Boeing 747 model to verify methodology and ensure consistency across subsystem models.
- Integrated aerodynamic and structural data into MATLAB/Simulink 6-DOF simulation framework, ensuring configuration accuracy and resolving cross team model discrepancies.
- Delivered technical review to project leadership, demonstrating how the integrated simulation supports requirement validation and system level performance assessment.

Fixed Wing UAV - Personal Project
Engineering Lead *May 2025 - Present*

- Led the design and prototyping of a long-range, fixed-wing UAV to serve as a low-cost solution for emergency response and search-and-rescue efforts.
- Utilized fundamentals from *Aircraft Dynamics* and *Vehicle Design* to analyze the longitudinal dynamics of the aircraft in order to develop a custom control system.
- Utilized SolidWorks Flow Simulation to perform aero analysis, deriving critical stability derivatives for aircraft dynamics analysis.
- Conducted a glide test to validate simulated performance, with real world results closely matching predictions.

University of Colorado Boulder, Silicon Flatirons Start Up Summer - Cookademy Boulder, CO
Start Up Co-Founder *June 2025 - August 2025*

- Co-founded a venture to design and develop a gamified cooking app for college students.
- Conducted market research and engaged with over 200 prospective users to identify key product features, including gamification, accessibility, and a social component.
- Collaborated across a small, multi disciplinary team to design a functional product prototype and communicate system requirements effectively.

WORK EXPERIENCE:

Mt. Everest Cuisine Boulder, CO
Waiter/Packaging staff *May 2019 - Present*

- Collaborated in a high paced team environment, ensuring reliable operations and clear communication across roles.