ISHAAN BATRA

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Education

Purdue University:
B.S. Aerospace and Aeronautical Engineering, B.A. Political Science Class of 2027
AAE: Specialization in Autonomy and Controls. Political Science: Concentration in International Affairs
Cumulative GPA: 3.7/4.0, *College of Engineering Dean's Honor List, Semesters Honors to date*

Relevant Coursework

Engineering Economics, Statics, Materials, Fluid Mechanics, Thermodynamics, Aerodynamics, Stats, Dynamics + Vibrations, Signal Analysis, Control System Analysis, Aerospace Propulsion, C Programming, Engineering Ethics

Experience

AI/ML Engineering Intern - *Bling Cloud* July 2025 - September 2025
- Owned design for a Python-based real-time Voice Resume Bot producing PDF and narrated resumes.
- Raised extraction accuracy 70% and cut repeat prompts 60% by fixing conversation state/field mapping.
- Scaled to 50+ concurrent websocket sessions, achieve stabilized TTS/STT pipeline.
- Contributed to a hiring-automation project that won a $500K contract.

Founder - *Hoot* August 2025 - Current
- Built an AI learning tool delivering context-aware, course-specific explanations from all course resources.
- Owned frontend architecture, UX, and multi-source citation generation for accurate, transparent results.
- Led initiative to secure faculty support at Purdue University; secured research + initial pilot

Mechanism Designer at FIRST Robotics Competition - *Palo Alto High School* August 2019 - July 2022
- Designed indexer for 2020 robot - won Motorola Solutions Quality award and first regional in 14 years.
- Designed a game for 2021 challenge - won game design award.

Projects

Swing & Stabilize Underactuated Nonlinear Control System - *Dartra Dynamics* August 2025 - Current
- Built, designed, and simulated a Furuta pendulum from scratch utilizing triple mode LQR, custom designed and 3D-printed parts (designed in Solidworks + NX), and the Teensy 4.1 controller.
- Measured back-EMF & torque constants; static/kinetic friction, viscous damping, Stribeck transition.
- Derived control law and governing ODEs from rigid-body + least-action, coupled with DC-motor equations.
- Computed Jacobians at equilibria; shaped voltage (upward → spiral source, downward → nodal sink).
- Implemented real-time Arduino control; achieved swing-up and upright stabilization.
- Created social media presence for the project - garnered over 1 million views on Instagram, under dartra10.

Harnessing the Earth to Heal the Sky August 2024 - December 2024
- Conducted aerodynamic analysis, including airfoil selection (NACA 4415) and drag polar determination, using industry standard tools to design an aircraft to combat the adverse effects of climate change.
- Owned stakeholder needs assessment and risk mitigation for aerospace systems.

RC Car Endurance Project - *Cofounder and Design Lead* January 2022 - July 2022
- Cofounded and led an initiative to design and manufacture a Guinness world-record breaking remote-controlled car (72.33 miles on one charge).
- Mentored 5 teammates in CAD software (SolidWorks).

Skills & Interests

Technical:
- NX, Solidworks, SQL, 3D Printing, MATLAB, XFLR5, LabVIEW, Python, Arduino, Basic C, Academic Writing, Complex Research and Design Analysis, Rapid Prototyping

Non Technical:
- Fluent in Mandarin and Hindi, Self-motivated, Friendly, Communicator, Deadline driven, Natural Collaborator, Ultimate Champion in Clash Royale, Basketball, Climbing, Love to self learn!