ADVAIT CHORDIA

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Education

University of Illinois Urbana-Champaign — *May 2027*
Bachelor of Science in Engineering Mechanics | Minor in Materials Science — *GPA: 3.86*

Skills

- Software & Analysis: CATIA v5, Creo, SolidWorks, Excel, AutoCAD, GD&T, Python, Ansys, Abaqus & MATLAB
- Fabrication & Testing: Prepreg & Wet layup, Adhesive bonding, UTM, CNC, 3D printing, hand & power tools

Project & Leadership Experience

Illini Electric Motorsport | Formula SAE

Front Wing Structures Project Lead — *Aug 2024 to Present*

- Simulated a worst-case cone strike in Ansys Explicit Dynamics with ACP-defined composite layups, iterating pad-up orientations to keep leading-edge strains within allowable limits and achieve SF of 3 at a 0.32 lb mass penalty.
- Built an FSI loop linking Star-CCM+ pressure maps to Ansys Static Structural, iterating ply schedules and material selection under realistic aero loads to limit deflection to <0.21" at 95 mph and aerodynamic sensitivity to a 0.04 Cl loss.
- Replaced a failing CFRP design with 7075-Al mounting struts, applying geometric optimization to achieve a 58% mass reduction while maintaining structural margins for bending and out-of-plane loading.
- Engineered joint architecture for 40 structural interface points, sizing 10-32/6-32 and NAS aerospace hardware with Keenserts to SF of 2 against peak shear loads while mitigating galvanic corrosion risks.
- Developed SOP layup manuals integrating CAD dimensions, ply-nesting results, and vacuum bagging sequences for a 9-member team, reducing prepreg consumption from 200 ft to 60 ft across a 10-element front wing package.

Connecting Rod Optimization Project

Personal Project — *Aug 2025 to Dec 2025*

- Built a custom Euler-Bernoulli FE solver and constrained NLP in Python to minimize conrod shank mass via SLSQP.
- Validated I-beam over H-beam through a comparative optimization under identical packaging constraints, with the I-beam achieving a 17.5% mass reduction by maximizing area moment of inertia within the fixed envelope.

UIUC Aerospace | Composites & Additive Manufacturing Lab

Undergraduate Research Assistant — *Jan 2025 to May 2025*

- Performed tensile (ASTM D3039), in-plane shear (ASTM D3518) and short beam shear (ASTM D2344) characterization of continuous-fiber CFRP composites on an Instron UTM, generating validated material property data.
- Resolved tow-lifting defects on a beta-model CF3D printer by introducing staged partial-cure pauses, developing custom toolpaths to control fiber alignment and maintain consistent fiber volume fraction across specimens.

Work Experience

Force Motors Ltd. | Automotive

Mechanical engineering Intern, R&D Powertrain — *June 2025 to Aug 2025*

- Reverse-engineered 8 legacy components into CATIA v5 models and authored 6 production-ready drawings during a CAD migration, applying GD&T to reduce tolerance stack-up and ensure part interchangeability.
- Automated crankshaft dimension decisions by building a Python parametric model evaluating Von Mises stress sensitivities across critical geometry variables, establishing scaling relationships for design.
- Resolved rotating assembly imbalance through vector loop analysis, iteratively phasing counterweights in Python to achieve a >90% reduction in net imbalance forces for high-RPM stability.

Gala Precision Engineering | Coil Manufacturing

Mechanical engineering Intern — *June 2024 to Aug 2024*

- Identified a recurring conveyor jam through a shop-floor time study, designed a passive mechanical lip in CAD, and drove installation on 2 of 3 machines, eliminating 20 minutes of daily downtime.

Other Roles: Course Assistant (Thermodynamics, Statics, Mechanics) | ASME E-fest Lead | TEC Advisor & Lead Photographer