Alexander J. Barry

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Education

Cornell University, College of Engineering **Ithaca, NY**
Major: Bachelor of Science in Mechanical Engineering *Expected Graduation: May 2027*
GPA: 4.10

Skills

Manufacturing & Testing: Mechanical testing (Instron Testing, SFPO), failure analysis/root cause analysis, test method development, material characterization, SEM imaging, Micro-CT, design for manufacturing
CAD & Fabrication: Fusion 360, SolidWorks, Creo, Onshape; GD&T; CNC machining; 3D printing
Programming & Analysis: MATLAB, Python, Data Analysis, Microsoft Office
Controls & Automation: PID & control systems

Relevant Coursework: Mechanical Design, Fluid Dynamics, Mechanics of Materials, System Dynamics, Thermodynamics, Statistics, Statics, Lasers and Photonics

Work Experience

Center for Composite Materials **Newark, DE**
Summer Intern *May 2025 – Aug 2025*
- Led process development experiments to optimize parameters in thermoplastic polyolefin composite manufacturing
- Standardized single-fiber pull-out sample fabrication, improving repeatability and reducing variability
- Optimized sample preparation workflow to increase throughput and reduce variability in interfacial shear testing
- Conducted data analysis on interfacial shear strength to evaluate material performance and process capability
- Presented research outcomes to faculty, earning 1st place in the Undergraduate Summer Research Symposium

Center for Composite Materials **Newark, DE**
Summer Intern *June 2022 – Aug 2024*
- Performed failure analysis and root-cause investigations on Cu/polyimide adhesion and bond reliability issues
- Determined material and processing adjustments to reduce CTE mismatch and optimize adhesion properties
- Led root-cause analysis of TuFF CF panel defects; implemented process controls to improve tensile properties by >10%
- Engineered new test method and custom fixture to characterize a material property not measurable by existing approaches
- Validated new material model MAT213 through experimental testing, resulting in improved simulation credibility

Engineering Experience

Cornell University Autonomous Drone Project Team **Ithaca, NY**
Mechanical Subteam Lead *Jan 2025 – Present*
- Designed CAD components for manufacturability, applying GD&T and tolerance analysis for CNC and 3D-printed parts
- Prototyped, assembled, and iterated on a 5" propeller quadcopter, balancing aerodynamic and manufacturing constraints
- Engineered a 1-meter ducted-fan surveillance drone, incorporating aerodynamic analysis and optimized structural design
- Managed project schedules and delegated tasks across the mechanical subteam to ensure on-time fabrication and assembly
- Directed onboarding and technical training for new members, standardizing CAD, fabrication, and assembly workflows

Bewley Applied Turbulence Research Laboratory **Ithaca, NY**
Undergraduate Research Assistant *Sept 2024 – Present*
- Implemented automation and control systems using PID algorithms for autonomous quadcopter flight stability
- Led subteam in compiling and analyzing flight path data to tune system response and minimize oscillations
- Documented findings and presented progress to research team, supporting ongoing experimental design and analysis