Alek M. Catterson

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Seeking a full-time aerospace engineering position starting May 2026.

EDUCATION

University at Buffalo   *Buffalo, NY*
Bachelor of Science: Aerospace Engineering | GPA: 3.8/4.0 | Dean's List all semesters   *Graduating in May 2026*

Wilson Tech   *Republic Airport (KFRG), NY*
2 Year Certificate of Completion: Aviation Science & Flight | GPA: 4.0/4.0| Top of Class   *Graduated in June 2022*

WORK EXPERIENCE

University at Buffalo | *Undergraduate Teaching Assistant and Tutor*   *August 2025 - December 2025*
- Held office hours to support MATLAB programming, numerical methods, and error analysis.
- Guided students on linear/nonlinear systems, ODEs, PDEs, eigenvalue problems, linear algebra, and statistics.

Cox & Company, Inc. | *Aerospace Engineering Intern | Icing Wind Tunnel*   *June 2025 - August 2025*
- Executed calibration tests at LIRL (LWC, MVD, flow angularity, etc.), documented procedure, and generated compliance reports per SAE ARP5905A standards.
- Designed and implemented calibration methods, ensuring calibration instrument accuracy and precision.
- Revitalized legacy calibration systems by writing data processing scripts and servicing aging hardware.
- Processed data in MATLAB to extract trends, validate results, and produce calibration reports.
- Collaborated with senior engineers to verify result compliance with FAA/SAE certification standards.
- Conducted rod heater experiments to generate power-voltage curves and resistance-power characteristics.

Adventure Park at Long Island | *Monitor Level 2 and Maintenance*   *May 2019 - August 2024*
- Led a team of 2 to maintain 14 aerial courses using hand and power tools to ensure customer safety.

PROJECTS & EXPERIENCE

Undergraduate Researcher: Experimental Fluid Dynamics   *University at Buffalo, NY*
Vortex Dynamics and Unsteady Aerodynamics Laboratory (AFOSR Funded)   *Fall 2024 - Present*
Awards: Experiential Learning Network Scholarship, Gustav and Grete Zimmer Memorial Scholarship
- Collaborated with a multidisciplinary team (Ph.D. and M.S. students) to run PIV and force experiments.
- Researched flow interactions of variable-AOA wings encountering finite obstacles in water towing tanks.
- Refactored MATLAB post-processing code (50% length cut) and adapted it for variable-AOA wing data.
- Completed Ansys Fluent CFD simulations of experiments (using dynamic meshing, UDFs, convergence checks, and multi-core processing) to evaluate feasibility of CFD for guiding future experiments.
- Designed (FEA structural simulation in Ansys) and machined an aluminum motor pillow block and transducer bracket, enabling variable wing pitching and finishing upgrades 43% under budget.

Gas Turbine Design | *Thermodynamics*   *University at Buffalo, NY*
- Designed a gas-turbine system with 230 MW power, 45% thermal efficiency and 39% backwork ratio.
- Coded MATLAB scripts for property evaluation, cycle analysis, and parametric sweeps.

SKILLS

Software: Ansys, Fluent, MATLAB/Octave, SolidWorks, xflr5, Mathematica, Creo Parametric, Autodesk Fusion, Arduino IDE, DASYLab, LabVIEW, Jupyter Notebook (Python)

Licenses/Certifications: FAA Part 107 UAS Remote Pilot, Private Pilot Certificate – *In Progress* (17.5 hours logged)

Technical: Atmospheric Flight Dynamics, Spacecraft, Precision Design, Aircraft Design, CFD/FEA/FEM