Geonyeong (Sam) Hong

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EDUCATION

North Carolina State University | **Raleigh, NC** **Expected May 2027**

B.S. Aerospace Engineering

- Cumulative **GPA**: 3.83/4; Dean's List, all semesters
- *Activities*: Aerial Robotics Club at NC State, Intramural Soccer Captain
- Relevant Coursework: Space Flight | Aerodynamics | Aero Structures | Solid Mechanics | Thermo-fluids | Linear Algebra | Dynamics | Statics | Vibrations | Foundation of Graphics (SolidWorks)

SKILLS

Technical Skills: MATLAB, Python, Microsoft Excel/Word/PowerPoint
CAD/Simulation: SolidWorks, MATLAB/Simulink, OnShape, Fusion 360, ANSYS Fluent, XFOIL, OpenVSP

PROJECTS

Fixed Wing VTOL UAV | Research Project, Advisor: Dr. Mingtai Chen **January 2026 - Present**

- Determined key geometric aspects (wing span, rotor placement, takeoff weight) using parameters from Daniel P. Raymer's *Aircraft Design* to assess stability, performance, and feasibility.
- Designed and modeled a three-axis tilt rotor tilting mechanism in **SolidWorks** and performed stress analysis to verify it could safely support motor loading.
- Currently developing UAV control systems by building **MATLAB/Simulink** simulation models and validating performance through physical flight testing using **PX4**, with a focus on autonomous operation.

XFOIL Analysis/Wing Optimization | University Project **February - April 2025**

- Designed and optimized a fixed-wing rescue aircraft focused on range, payload capacity, and performance in simulated weather conditions.
- Performed aerodynamic analysis using **XFOIL** to evaluate airfoil performance at climb, cruise, and descent.
- Developed **MATLAB** tools for wing planform optimization by analyzing induced drag across varying aspect and taper ratios, and validated the final design through structural and aerodynamic performance calculations.

Collapsible Bridge | University Project **January - April 2024**

- Designed and evaluated collapsible bridge concepts using **Fusion 360**, evolving from a 7-piece truss design with locking caps to a compact hinge-based solution.
- Identified structural weaknesses in bridge prototypes, including truss instability and hinge failure, using **SolidWorks Simulation** to locate peak stress regions, resulting in a wood-and-rope design with a 17.75 load-to-weight ratio.

LEADERSHIP & EXTRACURRICULAR ACTIVITIES

Aerial Robotics Club at NCSU

Treasurer **June 2025 - Present**

- Managed club finances using **Microsoft Excel**, including budgeting, purchasing, and tracking expenditures across grants, university allocations, and sponsorships, overseeing a ~$10,000 budget.

Airframe subteam **August 2024 - Present**

- Developed a nose cone model in **OnShape** by scaling previous geometries to a new design and performed aerodynamic analysis using **ANSYS Fluent**.
- Executed full aircraft design workflow, translating **Onshape** CAD models into manufacturable components while observing laser and wire-cutting processes.