

CARTER THOMPSON

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EDUCATION:

Syracuse University

Master of Science in Mechanical & Aerospace Engineering | GPA: 4.0/4.0

Bachelor of Science in Aerospace Engineering, Minor in Physics | GPA: 3.78/4.0

Syracuse, NY

Expected Dec 2027

May 2026

Honors: Magna Cum Laude, NASA New York Space Grant Recipient, Sigma Gamma Tau, Tau Beta Pi

SKILLS:

Software: MATLAB/Simulink, Python, C/C++ (Arduino), ANSYS (Fluent, Mechanical, Chemkin-Pro), SolidWorks, Fusion 360, KiCad, Git

Engineering & Laboratory: Subsonic/supersonic wind tunnel testing, hot-wire anemometry, DBD plasma actuators, oscilloscope data acquisition, signal processing, PCB design & soldering, carbon fiber composite layup, 3D printing, welding

Certifications: NAR Level 1 HPR Certification, PADI Advanced Open Water Diving License, MOTIS 622i Flight Simulator Operator

RESEARCH EXPERIENCE:

Fluids/Controls Researcher, Active Flow Control, Skytop Turbulence Lab, Syracuse, NY

May 2026 – Present

- Designing and building a closed-loop embedded control system on an Arduino Due that integrates a custom KiCad PCB, a hot-wire anemometer, real-time signal processing, and DBD plasma actuators for active flow suppression
- Training a 466-parameter neural-network controller via genetic algorithm optimization in MATLAB to drive the system in real time, achieving a 33% reduction in the wake velocity standard deviation vs. an uncontrolled baseline

Propulsion Researcher, Thermodynamics and Combustion Lab, Syracuse, NY

Apr 2025 – Present

- Developing a machine learning algorithm to predict laminar flame speed and propagation for kerosene/jet fuel using the JetSurF 2.0 chemical kinetics mechanism in ANSYS Chemkin-Pro
- Running parametric sweeps across 200 conditions spanning equivalence ratio, pressure, and unburned gas temperature to generate training data and validate simulation results against experimental benchmarks

PUBLICATIONS & PRESENTATIONS:

Thompson, C., Zigunov, F., Namatsaliuk, M., “Active Flow Suppression of Vortex Shedding Through a Closed-Loop, Neural Network Controller Using Plasma Actuators,” *APS Division of Fluid Dynamics Annual Meeting*, Orlando, FL, Nov 2026 (Accepted).

Oliveira, T., Wolf, W., Ramos, B., Podzun, D., **Thompson, C.,** Zigunov, F., Dawson, S., “Closed-Loop Control of Vortex Shedding from a Flat Plate: Experimental Investigation and Neural Network Modeling,” *AIAA SciTech 2027 Forum*, Jan 2027 (Accepted).

ENGINEERING EXPERIENCE:

Mechanical Engineering Senior Capstone, Boeing-Sponsored, Syracuse, NY

Sep 2025 – May 2026

- Redesigned the avionics shelf of the CH-47 Chinook helicopter, achieving a 47% reduction in weight (~13 lb. per shelf) without compromising structural integrity or manufacturability
- Performed vibration and thermal analyses in ANSYS Fluent and Mechanical to verify structural integrity under varying loads and thermal response under high-heat operating conditions
- Developed comprehensive test plans to validate simulation results through prototype testing, ensuring compliance with MIL-STD-1290A

Aerospace Engineering Capstone, Spaceport America Cup (IREC), Syracuse, NY

Jan 2026 – May 2026

- Designed a sounding rocket featuring an active attitude control system to deliver a payload of 4.45 lb. to a target apogee of 10,000 ft AGL using a commercially available solid rocket motor
- Developed multiple integrated subsystems, including an altitude-controlled recovery system, a vehicle attitude control system, and an avionics system
- Conducted full-scale testing, confirming stable ascent and validating the vehicle's aerodynamic design, and diagnosed a parachute deployment failure caused by insufficient internal airframe clearance

Student Machine Shop Employee, Syracuse University, Syracuse, NY

May 2026 – Present

- Assist engineering students in translating CAD designs into manufactured components, providing hands-on guidance on the safe operation of machining and fabrication equipment
- Operate and maintain additive manufacturing equipment, including 3D printers, to produce prototypes and components supporting student and faculty engineering projects

Engineering Intern, Power & Manufacturing Group, CHA Consulting, Inc., Albany, NY

May 2025 – Jan 2026

- Designed and analyzed overhead transmission and sub-transmission lines using FEA software (PLS-CADD) to ensure compliance with the NESC under static and dynamic loads
- Prepared inspection reports for National Grid, presenting recommendations on improving the reliability and longevity of its sub-transmission infrastructure

Design Team Member, Invent@SU, Syracuse University, Syracuse, NY

May 2024 – May 2025

- Worked with a multidisciplinary team and a client to develop an electromagnetic wheelchair docking system, allowing users to lock themselves into their vehicles independently
- Designed 3D models and assemblies using SolidWorks, performing a full stress analysis on the structure to ensure all components met DOT regulations in the event of a crash
- Presented the design to a panel of 14 investors, earning second place overall and advancing toward a provisional patent application

LEADERSHIP & TEACHING EXPERIENCE:

Aerodynamics & Composites Project Lead, Citrus Racing SU FSAE, Syracuse, NY

Jan 2025 – Present

- Lead a team of engineering students to design and develop the aerodynamics package of the car using SolidWorks
- Utilize ANSYS Fluent and a subsonic wind tunnel to analyze the aerodynamic properties of the design
- Develop carbon fiber manufacturing molds and processes for all aerodynamic components

Graduate Teaching Assistant, Air-Breathing & Rocket Propulsion, Syracuse University, Syracuse, NY

Aug 2026 – Present

- Deliver weekly technical instruction to 36 students on propulsion system fundamentals, translating complex engineering concepts into applied problems, and provide 1:1 troubleshooting support during office hours on technical coursework

Vice President, American Institute of Aeronautics and Astronautics Student Branch, Syracuse, NY

Apr 2023 – May 2026

- Ran general body meetings and instructional review sessions supporting aerospace engineering coursework
- Organized a yearly guest speaker series highlighting industry professionals to help enhance students' understanding of aerospace careers and current industry practice