

# Sarah M. Sullivan

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## OBJECTIVE

To secure an internship as a prospective Master's student for the summer of 2024 in the field of aerospace engineering, with a focus on analytical work including thermal and/or structural analysis.

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## EDUCATION

**Rensselaer Polytechnic Institute (RPI)**, Troy, NY

Bachelor of Science in Aeronautical Engineering, GPA: 3.9

**Expected Graduation: May 2024**

Master of Engineering in Aeronautical Engineering

**Expected Graduation: May 2025**

**Coursework:** Aerodynamics, Aerospace Structures, Flight Mechanics, Fluid Mechanics, FEA, Propulsion System, Thermodynamics

**Involvements:** Tau Beta Pi Engineering Honor Society (Activities Chair), Robotics Club, Drone Club

**Academic Accomplishments:** Dean's Honor List, Rensselaer Medal Scholarship, RPI Archimedean Program

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## EXPERIENCE

**Pratt and Whitney, North Berwick Engineering Center, Aerothermal Fluids Engineer**

**Jan 2023-Aug 2023**

- Created, updated, and ran thermal models for commercial and military static turbomachinery components using **ANSYS APDL, Siemens NX**, and other in-house software (**BCON, FABL**, etc.)
- Analyzed the physics and implementation of theoretical and empirical thermal responses, temperatures, flow conditions, and heat generation on high and low-pressure turbine cooling components in **BCON**
- Ran a quasi-one-dimensional flow solver (**FABL**) and updated the modeling for the F135 secondary flow
- Participated in a cross-functional team where communication and integration were held with different disciplines (project, design, structures, manufacturing) with the result of supporting product release stages (RMR and PDR)
- Delivered thermal findings by documenting and presenting analytical results using **Microsoft Word, PowerPoint**, and **Excel** to chief discipline engineers in formal reviews
- Provided thermal inputs, and context to the IPT for structural lifing analysis and thermally driven redesign
- Wrote macros for troubleshooting run files, plotting results for large amounts of data, and compiling/formatting data into presentations quickly
- Worked in an **Agile** environment where status was updated daily via scrums and progress was delivered to program stakeholders via demos at the end of three-week sprints

**Center for Flow Physics and Control, RPI, Undergraduate Researcher**

**Jan 2022-Present**

- Designed and optimized aerodynamic wind tunnel models using **Siemens NX** to reduce manufacturing costs and lead time, and to simplify the design iteration process of the models
- Designed NACA 0015 wing models for use in dynamic motion experiments by utilizing a sting mount that allows for pitch, yaw, and roll movements and synthetic jets for active flow control
- Updated cantilevered NACA 0015 wing models to implement steady jets for use in analyzing flow across different wing geometries, which varied in aspect ratio, sweep angles, and taper ratios
- Performed studies of flow control over SLA wing models in a water tunnel running **SPIV experiments** as well as in a large-scale subsonic wind tunnel running **PPIV experiments**
- Incorporated passive flow control methods into optimized designs for a GM hybrid SUV model with the intent to analyze and reduce drag effects on the vehicle located around the wheels, underbody, and rear

**MANE Department, RPI, Undergraduate CAD TA**

**Aug 2021-May 2022**

- Provided instructional direction and feedback to students with the intent of improving their learning of CAD software and **3D modeling** practices
- Leveraged knowledge of **manufacturing practices** and **Siemens NX** in tutoring lessons and help sessions to help students understand real-world manufacturing limitations and modeling best practices
- Exercised interpersonal and communication skills to determine and tailor the best way to teach individuals

**eVTOL Surveillance Drone Project, RPI, Project Lead**

**Aug 2021-Dec 2021**

- Led a 6-member team to design a surveillance hexacopter drone using the **Engineering Design Process**
- Managed subsystem integration, coordinated team deadlines via a **Gantt chart**, and led technical documentation
- Determined performance specifications of the propulsion subsystem by performing rotor thrust and motor power calculations
- Performed trade studies to determine which motors, rotors, and electronic speed controllers would enable the aircraft to reach performance specifications
- Designed and manufactured a testing rig to evaluate thrust performance of hexacopter drone

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## SKILLS

**Technical:** Siemens NX, ANSYS APDL, Python, MATLAB, Microsoft Office Suite, Analysis, Manufacturing

**Machining:** Lathe, Mill, Welding, CNC Mill, Laser Cutter, 3D Printing, Various Hand Tools, Soldering

**Professional:** Formal and Informal Communication, Outreach, Detail-Oriented, Presentation Skills