
SKILLS/SOFTWARE EXPERIENCE

Coding: MATLAB, Python, LaTeX, LabView, Altair HyperWorks, Wolfram, basic Git, basic C++ (Arduino), Java

CAD: Siemens NX, SolidWorks, Catia, AutoCAD

Lab Skills: Particle Image Velocimetry, hot-wire anemometry, circuitry, instrumentation

Soft Skills: mentorship, experiment/project planning, problem-solving, teaching/tutoring, technical literature

EDUCATION

Rensselaer Polytechnic Institute (RPI), Troy, NY (June 2019 – Present)

Doctoral Program in Aeronautical Engineering (4.0 GPA) (anticipated May 2025)

Focus: Coherent Structure Manipulation for Separation Control

Master's Program in Aeronautical Engineering (received May 2023)

Focus: Laminar Flow Control on Drone Airfoils

Case Western Reserve University (CWRU), Cleveland, OH (Aug. 2014 – Jan. 2019)

B.S. Mechanical Engineering and Aerospace Engineering (3.65 GPA), Minor: Spanish

EXPERIENCE

Research Assistant (June 2019 – Present)

Center for Flow Physics and Control (CeFPaC) – RPI

Spearhead projects on separation control with coherent turbulent structures and delaying transition over a natural laminar flow airfoil using **novel flow control** techniques

Provide experimental data for collaborative project to control hairpin vortices in **lam./turb. boundary layers**

Lead undergraduate teams on **design of custom wind tunnel models**

Conduct experimental campaigns with **Particle Image Velocimetry** and hot film anemometry

Characterize flow structures through **MATLAB** and ParaView analysis

Mentor and guide students in lab work: **2 masters, 3 undergraduate, and 1 high school**

Teaching Assistant

Flight Mechanics – RPI (Aug. – Dec. 2022)

Fluid Dynamics Laboratory – RPI (Jan. – May 2021)

Facilitate laboratory experiments for aerodynamics pedagogy in the undergraduate low speed **wind tunnel**

Promote learning through office hours, insightful comments, and graded remarks on weekly coursework

NSF GAANN Fellowship Experiential Learning

Aerodynamic Flow Control – RPI (Jan. – May 2022)

Flight Mechanics – RPI (Aug. – Dec. 2021)

Synthesize and hold four unique **110-minute lectures for up to 60 students** on relevant course material

Attend biweekly lectures and grade exams

NSF Research Experience for Undergraduates (May – Aug. 2018)

Florida Center for Advanced Aero-Propulsion (FCAAP) – Florida State University (FSU)

Investigate active flow control on **rocket nozzle turbulent flow separation**/characterization using microjets

Conduct static pressure measurements and assist with Stereo Particle Image Velocimetry measurements

Analyze data to understand flow phenomena and quantify active flow control performance

Cooperative Learning Experience (Jan. – Aug. 2017)

Héroux Devtek, Inc. (HDI) – Strongsville, OH

Develop new **manufacturing plans for electroplating** of 777X Boeing **landing gear**

Oversee renovation of existing CNC machine coolant filtration systems

PUBLICATIONS/PRESENTATIONS

Wylie, J.D.B., Jariwala, A., Suryanarayanan, S., Goldstein D., Amitay, M., “Synthetic Jet Actuation for Boundary Layer Re-Energization and Physio-Cyber Simulations.” Accepted to *TSFP 2024*.

Wylie, J.D.B., Amitay, M., “Control of Artificially-Generated Hairpin Vortices in a Laminar Boundary Layer.” *AIAA SciTech Forum*, Jan. 8-12, 2024, <https://doi.org/10.2514/6.2024-0928>.

Wylie, J., Mishra, S., Amitay, M., “Tollmien–Schlichting Wave Control on an Airfoil Using Dynamic Surface Modification.” *AIAA Journal*, 59(8), August 2021, <https://doi.org/10.2514/1.J060233>.

Khobragade, N., **Wylie, J.**, Gustavsson, J., Kumar, R., “Control of Flow Separation in a Rocket Nozzle Using Microjets.” *New Space*, 7(1), Mar. 18, 2019, <https://doi.org/10.1089/space.2018.0037>.