Nico Morrison

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Education

California Polytechnic State University, San Luis Obispo

- **Bachelor of Science** in **Aerospace Engineering** Exp. Graduation: June 2025
  Aeronautical Engineering Concentration, **GPA: 3.6**
- Pursuing **MS** in **Aerospace Engineering** Exp. Graduation: June 2026
  Thesis Subject: Capabilities and Infrastructure Needs for Commercial Hydrogen-Powered Aircraft

Aero 568 / 569 – Aerodynamics Research and Development I & II January 2025 – Present

- Collaborate with 15 other students to convert the Cal Poly Cirrus SR-22T to an Optionally Piloted Aircraft
- Develop an open-loop flight simulator in Simulink for longitudinal control of the aircraft
- Oversee the flight test for the excitation and stability response of the 3211 pitch test maneuver
- Utilize flight test data for confirmation of aerodynamic derivatives, and validation of the open loop Simulink model

Aero 409 – Flight Test January 2025 – March 2025

- Usage of Acra KAM-500/DAS Studio, with industry-level ground station and telemetry
- Operation of data acquisition systems, on-board data collection, and Clear-Com radio skills
- Conducted Pitot-Static Correction, Stall, PIW-VIW, Neutral Point, and Climb Performance tests
- Utilized IADS to visualize data and create reports on collected data for the Cal Poly Vans RV7A, and Cirrus SR-22T

Professional Engineering Experience

Hypersonic Wind Tunnel Project Engineer June 2024 – Present

Cal Poly Partners/AFRL | Mach 6 Ludwieg Hypersonic Wind Tunnel

- Develop post-processing code in Python to analyze characteristics of Hypersonic shock-boundary layer interactions
- Gather Schlieren Photography testing data to compare with Hypersonic CFD models from Siemens STAR-CCM+
- Create and implement an image-processing software to identify points of interest from experimental test results

Instructional Student Assistant September 2023 – June 2024

Cal Poly Academic Skills Center

- Hosted personal and group tutoring sessions for students in 200- and 300- level Math and Engineering courses
- Collaborated with colleagues to create more effective instructional material and strategies
- Graded and provided feedback on assignments, projects, and activities

Engineering Club and Project Experience

Performance Team Lead April 2023 – Present

Cal Poly Design, Build, Fly

- Refined the multivariable score optimization to develop system-level requirements, integrating propulsion, structural, and aerodynamic models
- Leveraged MATLAB to iterate design parameters and conduct system level trade studies to improve flight and takeoff characteristics, with the goal of maximizing score during competition
- Led the prototype and competition aircraft flight tests, delegating tasks necessary for efficient and useful data collection
- Validated performance, stability, and propulsion models using onboard data collection instruments, calibrated video footage, and pilot feedback
- Worked with a team of 25 other students to engineer and manufacture an aircraft featuring a 15-foot wingspan designed to transport a 35-pound payload, achieving 6th place at the 2024 SAE International Aero Design West Competition

Controls Researcher January 2024 – September 2024

Cal Poly Undergraduate Research Program

- Performed a literature review of existing research on flapping wing UAVs and fuzzy logic controls to guide and bound our initial open-loop simulation
- Referenced published hummingbird inertia and frequency characteristics to design an open-loop dynamic model in Simulink
- Integrated a Sugeno fuzzy controller into the UAV to stabilize the system through control system optimization
- Simulated delayed stall, added mass, and rotational lift characteristics of the wings in Simulink

Skills, Awards, Accomplishments

Computer: MATLAB, Simulink, IADS, Python, SOLIDWORKS, GitHub, Ansys Fluent, Arduino, MS Excel, Onshape
Language Fluency: English and Italian; Conversational French, Spanish
Manufacturing Certifications: Drill, Lathe, Mill, Welding, Composites