JOHN RICHARD SCHLICHTING

Boulder, CO | johnschlichting101@gmail.com | 720-539-5266
Portfolio: johnschlichting.com

EDUCATION

University of Colorado Boulder — May 2026

B.S. Integrated Design Engineering — Concentration: Aerospace Engineering | Emphasis: Engineering Management
Minor: Business Administration | GPA: 3.16

TECHNICAL SKILLS

Aerodynamics & Design: MATLAB, SimScale CFD, XFLR5, OpenVSP, static stability, wing/tail sizing, airfoil selection
Programming & Electronics: Python, C++, Arduino, Raspberry Pi, soldering, servo control
CAD & Manufacturing: SolidWorks, Onshape, 3D printing (PLA/TPU/ASA), foam fabrication, carbon fiber structures
Professional: Technical writing, data analysis, market analysis, project management, public speaking

ENGINEERING PROJECTS

Buffalo Advanced Air Transport — Morphing Trailing Edge Demonstrator — 2025 – 2026

Prototype Team | Smead Aerospace Senior Design | University of Colorado Boulder

- Contributed to the Prototype Team building a sub scale flight demonstrator to validate Morphing Trailing Edge (MTE) technology for a clean sheet transonic transport concept targeting 50% NMpg improvement over the 737 Max 8.
- Independently designed the full tail assembly: sized horizontal (VH = 0.685) and vertical (VV = 0.0403) stabilizers using volume coefficient methods, aiming toward a stable configuration to maximize pilot recoverability. Selected NACA 0012 airfoil for both tail surfaces based on low Reynolds number performance characteristics and symmetrical camber.
- Validated demonstrator static margin using MATLAB stability model targeting ~15%. Fabricated the entire tail assembly including stabilizers, control surfaces, and carbon fiber structural elements.
- Team wind wall testing demonstrated a statistically significant increase in CL across all MTE deflection angles. Prototype completed 3 flights achieving stable flight, in flight 20° MTE deflection, and positive static/dynamic stability.

Subscale Wind Tunnel — Design, Build, and CFD Study — 2026

Independent Project | Designed, Built, and Analyzed on My Own

- Designed and 3D printed an open circuit wind tunnel (5" x 5" test section, 2.56:1 contraction) with a custom mist generator for flow visualization. Measured 2.3 m/s (Re ≈ 6,200) using slow motion video.
- Wired and programmed a Raspberry Pi in Python to set the airfoil's angle of attack with a servo, with a saved calibration and a live LCD display of the current angle.
- Simulated a Clark Y airfoil from 0° to 20° in SimScale (steady laminar, 3.5M cell mesh with boundary layer inflation) inside the tunnel and in free air, then wrote a MATLAB script for CL, CD, L/D, convergence, and error bars.
- Identified and quantified wall interference that hid the airfoil's stall. Walls cut lift by ΔCL ≈ 0.16 at low angles and inflated it 25% at 20°. Benchmarked against XFLR5 and traced the cause back to a 0.4 chord to height ratio, 2x the usual limit.

Aerospace Vehicle Design Lab — Fixed Wing Glider — Summer 2024

Aerodynamics Lab | University of Colorado Boulder

- Designed, fabricated, and hand launched a fixed wing glider. After initial test flights identified a massive shortfall between predicted (140m) and achieved (51.6m) glide range, driving a launch condition sensitivity analysis.
- Developed MATLAB models for drag polar, maximum range, and endurance validated against wind tunnel and wiffle tree load tests, then traced the prediction gap back to launch condition assumptions omitted from the model.

Step2It Cane — Smart Walking Cane for Active Aging — Spring 2025

Invention and Innovation | University of Colorado Boulder

- User research showed 68% of cane users are active fewer than 2 days per week, a gap linked to higher mortality risk.
- Built a multi material smart cane (aluminum shaft, wood handle, TPU base, ASA printed housing) with Arduino step counting and LCD display, and wrote the business plan including TAM/SAM/SOM and break even analysis.

Cord Keeper Pro — NICU Sensor Cord Management System — Fall 2024

Product Design | University of Colorado Boulder

- Interviewed labor and delivery staff and found four critical NICU sensors were routinely lost during deliveries, pulling nurses away from patients at the moment of highest need.
- Engineered a ratchet plunger retraction mechanism using elastic cord energy storage for automatic retrieval with zero learning curve, validated through structural analysis, magnet strength testing, and no instruction user trials.

RELEVANT COURSEWORK

Aerodynamics | Thermodynamics and Heat Transfer | Systems Engineering | Engineering Management | Business Operations