Bradley Wassef

(734) 355-5127 | bwassef9@gmail.com | linkedin.com/in/bwassef

Active U.S. Secret Security Clearance

PROFESSIONAL EXPERIENCE

Guidance, Navigation & Control Engineer | Boeing Defense, Space & Security, St. Charles, MO — Jul. 2026 – Present

- Develop C/C++ flight software for guidance and autopilot functions on Joint Direct Attack Munition (JDAM) variants, implementing GNC mode and control logic to flight software requirements.
- Verify JDAM flight software through software-in-the-loop (SIL) and hardware-in-the-loop (HIL) testing, building Python and MATLAB test cases and scripts to confirm requirements compliance.
- Design and analyze autopilot control laws in MATLAB/Simulink for these variants, applying linear stability analysis to evaluate stability margins and closed-loop performance.
- Perform actuator analysis and modeling on a proprietary program, developing control surface actuator models in MATLAB/Simulink to improve closed-loop simulation fidelity.
- Generate and optimize JDAM trajectories in Python and MATLAB, evaluating guidance performance across mission scenarios and constraints.
- Run Monte Carlo simulation campaigns to assess JDAM GNC performance across dispersions and inform design decisions.
- Trace JDAM GNC requirements to verification evidence and coordinate integration with flight software, systems, and test teams.

Management Consulting Intern | Cohen & Company, Cleveland, OH — Jun. 2025 – Aug. 2025

- Supported ERP/EPM system evaluations and vendor trade studies, influencing $1.2M+ in client software investment decisions.

ENGINEERING PROJECTS

GNC Engineer | Spacecraft Attitude Control with Star Tracker, UIUC — Apr. 2025 – May 2025

- Modeled 6-DOF spacecraft dynamics with reaction wheels and star tracker in Python; cut simulation runtime 25% via nonlinear EOM derivation.
- Designed LQR attitude control with Kalman filtering, improving orientation estimation accuracy by 42% under sensor noise.
- Ran 100+ Monte Carlo simulations with randomized disturbances, achieving 94% autonomous rendezvous and docking success within 60 s.

Design & Manufacturing Engineer | Tailless MUAV (Flying Wing), UIUC — Jan. 2026 – May 2026

- Sized a tailless flying wing in OpenVSP to meet <70 in span, <3.5 lb MTOW, and 10+ min endurance; built and flew it at 3.1 lb takeoff weight.
- Analyzed longitudinal static stability and set CG envelope, elevon limits, and reflex to achieve stable, trimmable flight without deep stall.

Aerodynamics Lead | AIAA Carrier-Based Strike Fighter Design, UIUC — Aug. 2025 – May 2026

- Developed constraint and mission-based sizing benchmarked to the F/A-18E/F for 700+ nm combat radius, Mach 1.6 dash, and 7g maneuver requirements.
- Ran AVL trade studies and validated the configuration with FlightStream and SU2 CFD, meeting a <145 kt approach within 35 ft span.

RESEARCH

Undergraduate Researcher | Additive Manufacturing & FEA, UIUC — Aug. 2024 – Dec. 2024

- Tested and modeled 50+ PLA/ABS specimens in Abaqus; automated boundary condition setup in Python, cutting setup from hours to minutes.

EDUCATION

University of Illinois at Urbana-Champaign — May 2026

B.S. in Aerospace Engineering | *James Honors Scholar* | *GPA: 3.58/4.00* — *Urbana-Champaign, IL*

TECHNICAL SKILLS

Programming: Python, MATLAB/Simulink, C, C++
GNC & Controls: Flight software, SIL/HIL testing, control law design, LQR, Kalman filtering, 6-DOF simulation, actuator modeling, trajectory generation, Monte Carlo analysis, stability analysis
Analysis & Design Tools: AVL, FlightStream, SU2, OpenVSP, Abaqus, ANSYS, Siemens NX, SolidWorks
Engineering: Aerodynamics, flight mechanics, vehicle sizing, propulsion integration, FEA, CFD, CNC machining, additive manufacturing
Clearance: Active U.S. Secret