

ALBERT ADDO

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SUMMARY

Mechanical and aerospace engineer (Cornell M.Eng. Aerospace, B.S. MechE; U.S. citizen) who owns hardware end to end — trade study, sizing, fabrication, instrumentation, and commissioning. Designed, machined, and commissioned an automated positioning system that gave a wind tunnel the measurement capability it lacked, root-caused a failing measurement chain and built its replacement, and reverse-engineered a V8 aircraft engine into a complete CAD assembly. Six propulsion and fluids courses back a feed-system redesign and an electric-propulsion simulation.

EDUCATION

Cornell University, College of Engineering, Ithaca, New York

Master of Engineering in Aerospace Engineering

Dec 2025

Bachelor of Science in Mechanical Engineering (ABET-accredited)

May 2025

Honors / Awards: Sibley School Outstanding Senior Award for Distinction in Leadership & Service (1 of 2 from 180+); McMullen Dean's Scholar (2021–2025); Dean's List

Selected Coursework: Aircraft & Spacecraft Propulsion (incl. cryogenic propellants), Electric Propulsion & Plasmas, Intermediate Fluid Mechanics with CFD, Advanced Heat Transfer, Finite Element Analysis, Engineering Vibrations, Mechatronics

SPECIALIZED SKILLS

Design & Build: End-to-end hardware ownership — trade studies, hand-calculation sizing, fabrication, integration, and commissioning; CAD — Fusion 360 (advanced), SolidWorks (intermediate); manual machining, 3D printing, 80/20 structures, mechanism and fixture design, DFMA, GD&T fundamentals

Test & Instrumentation: Test plan development and execution, instrumented data acquisition (NI DAQ, LabVIEW, load cells, encoders), embedded C firmware, sensor integration and calibration, model-vs-measurement correlation, root-cause investigation

Propulsion, Analysis & Software: Feed-system and pressurization design, thermodynamic cycle modeling, plasma simulation; FEA (ANSYS plus a custom solver written from scratch, within 10% of ANSYS), CFD (Fluent); Python and MATLAB (advanced), C, C++, Git

ENGINEERING EXPERIENCE

Aerospace Engineering Intern (Design, Build & Test) | *Cornell Wind Tunnel & Turbine Studio, Ithaca, NY*

Summer 2023

- Owned the design and build of a motorized two-axis positioning system from concept to commissioning — selecting the drive through a four-option trade study, sizing it by free-body analysis, machining the mounts in-house, and integrating motors, encoders, firmware, and a LabVIEW operator interface.
- Commissioned it with a 154-point velocity survey of the tunnel cross-section, establishing repeatable, position-resolved measurement to 0.44% standard deviation of mean.
- Root-caused invalid force data to a faulty load cell against published airfoil references, then designed and built the replacement mounting hardware — restoring better than 95% measurement accuracy, with documentation adopted by the senior laboratory course.
- Designed a wind turbine blade from a 24-airfoil MATLAB study, fabricated it, and ran the test campaign — correlating finite-element predictions to measurement within 15%.

Mechanical Engineering Intern (Design & CAD) | *Cornell Glenn Curtiss Engine Studio, Ithaca, NY*

Summer 2024

- Reverse-engineered a 1916 Curtiss V8 aircraft engine with no documentation into a complete, motion-validated CAD assembly, now driving an augmented-reality museum exhibit.
- Designed and built a custom rotatable engine mount from 80/20 hardware, improving safety and cutting dismantling time.

Sales Engineer (Aircraft Performance & Software) | *Embraer Executive Jets, Melbourne, FL*

Jan 2026–Present

- Verify aircraft performance predictions against certified data, investigating discrepancies to root cause.
- Built and deployed two Python applications in under four months automating fleet analysis (Microsoft Copilot Studio).

Research Engineer, M.Eng. | *Cornell University, Prof. Jane Wang Lab, Ithaca, NY*

May 2025–Dec 2025

- Derived nonlinear equations of motion for a flapping-wing vehicle, built the Python/MATLAB simulation, and root-caused a reinforcement-learning reward flaw — improving training reward by 75%.

LEADERSHIP & TEACHING

Teaching Assistant | *Mechanical & Aerospace Engineering Dept., Cornell University, Ithaca, NY*

Aug 2022–Dec 2025

- TA for Dynamics, Fluid Mechanics, Thermodynamics, and Mechatronics for three-plus years; designed and built the Mechatronics TA demonstrator robot (tied with ASML).

SELECTED PROJECTS

Spacecraft Propulsion Feed-System Redesign (MAE 5540): Led the redesign of an Apollo-class bipropellant propulsion system from pressure-fed to turbopump-fed — owning the parametric analysis and the turbopump and propellant-routing CAD — enabling a 5.5 MPa chamber and cutting propellant ~25%.

Microwave Plasma Jet Engine Simulation (MAE 6540): Sole author of a 3D MATLAB model of plasma formation in an experimental electric propulsion device — electron heating, impact ionization, and coupled electron and gas energy exchange.

Custom Finite-Element Solver & Wing Optimization (MAE 5700): Wrote a structural finite-element code from scratch, verified it within 10% of ANSYS, and used it to optimize a wing to minimum weight against 252 MPa stress and 0.375 m deflection limits.

Glider Design, Build & Flight Competition: Placed Top 5 of 30+ teams designing, building, and flight-testing a glider under deadline.