# Aaron Lin

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## EDUCATION

**Boston University** Boston, MA
*B.S. Mechanical Engineering, Aerospace Concentration* Sep 2024 – May 2028
GPA: 3.76/4.0, Dean's List
**Study Abroad:** BU Sydney Sophomore Engineering Program, University of Sydney Spring 2026
**Relevant Coursework:** Mechanics of Materials, Energy and Thermodynamics, Differential Equations, Computational Linear Algebra

## PROFESSIONAL EXPERIENCE

**Mechanical Engineering Intern** Feb 2026 – Jun 2026
*Culturon (plasma-activated coatings for life sciences)* Sydney, Australia
- Designed and executed Optical Emission Spectroscopy (OES) experiments using an HR4000 spectrometer; authored protocols formalizing plasma consistency evaluation and elemental contaminant detection procedures.
- Developed an automated Python analysis suite (pandas, scipy, astroquery) to process OES spectral data, isolate elemental emission peaks, and cross-reference identifications against the NIST atomic line database.
- Authored a benchmarking report comparing OES plasma diagnostics against an established reference chamber, establishing key emission line signatures for contamination tracking and process qualification.

**AI Trainer** Oct 2025 – Dec 2025
*Handshake AI Fellowship* Remote
- Developed and evaluated domain-specific prompts benchmarking LLM accuracy across engineering and physical science subfields; applied subject-matter expertise to identify reasoning failures on scientific and quantitative topics.
- Provided structured expert feedback on model outputs, supporting targeted accuracy improvements on technical and domain-specific knowledge tasks.

## PROJECTS

**Project Engineer** Sep 2024 – Present
*Boston University Rocket Propulsion Group* Boston, MA
- Designing an aerodynamic fairing for an externally-mounted downcomer on the Argo rocket; evaluating tangent ogive and power-law nosecone profiles under Mach 2.81 max-Q conditions via ANSYS Fluent CFD and OpenRocket trajectory simulation.
- Designed a converging-diverging rocket nozzle in SolidWorks using 1D compressible flow theory; validated structural integrity via FEA under 80 psi chamber pressure, confirming a 2.11 Factor of Safety across three design reviews.
- Fabricated the nozzle via resin 3D printing and executed a static test-fire, integrating with a 1-inch NPT chamber and relay ignition circuitry to validate design performance under live combustion conditions.

**Academic Project** Sep 2025 – Dec 2025
*Deskinator — Autonomous Cleaning Robot* Boston, MA
- Authored Arduino C++ firmware implementing S-curve pathing, IR proximity-triggered 90° edge-avoidance turns, and gesture-activated start to enable fully autonomous operation across a 4 ft by 4 ft desk surface.
- Contributed to full system assembly and iterative subsystem redesigns, including upgrading from stepper to 12V N20 encoder motors and replacing the vacuum fan with a 5300 RPM, 230 CFM axial unit after prototype testing revealed insufficient torque and suction.
- Team ranked in top 4 of approximately 20 groups; achieved 76% debris pickup across suction trials with the upgraded fan and nozzle configuration.

**Academic Project** Jan 2025 – May 2025
*Temperature Sensor Prototype* Boston, MA
- Developed and programmed an Arduino-based room temperature monitor in C++, featuring an LCD display, TMP36 sensor, and an alert system (LEDs, buzzer) housed in a custom ABS enclosure.
- Authored a technical report evaluating system performance, identifying key limitations (battery life, component selection, manufacturing process), and proposing improvements for potential commercialization.

## SKILLS

**Software:** SolidWorks (Simulation, HSMworks), Onshape, ANSYS Fluent, OpenRocket, Python, MATLAB, C++ (Arduino), Java
**Engineering:** Mechanical Design, FEA, CFD, Supersonic Aerodynamics, 1D Compressible Flow, Stress Analysis, GD&T (fundamentals), Thermodynamic Cycle Analysis, Technical Writing, Systems Integration, Experimental Testing
**Fabrication:** Additive Manufacturing (FDM, Resin), CNC Machining, Manual Lathe, Manual Mill, Soldering, Electronics Assembly
**Languages:** English (Native), Mandarin Chinese (Conversational)

## CERTIFICATIONS

A Hands-On Introduction to Engineering Simulations — edX / CornellX, 2026
Machine Learning Specialization — DeepLearning.AI / Stanford University, 2024