

# Jacob Goldberg

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## EDUCATION

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### GEORGE WASHINGTON UNIVERSITY

Bachelor of Science in Mechanical Engineering - Aerospace Concentration

Cumulative GPA: 3.86

Washington, DC

Expected May 2027

## ENGINEERING/DESIGN EXPERIENCE

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### BOOM SUPERSONIC

Build Engineering Intern

Centennial, CO

06/2026 - 08/2026

- Coordinated a 20-sample Inconel 718/M250 inertia-welding trial with Interface Welding to establish process parameters and evaluate supplier capability for a low-pressure shaft with up to a 40-week production lead time.
- Designed and implemented modular 80/20 support structures for the Sprint Core oil skid, routing wiring above hot instrumentation and mounting electrical boxes with custom-drilled brackets.
- Developed 5+ process paths in Manufacturo covering 40+ operations and 200+ steps to support first-time SN0 turbofan engine assembly, establishing structured workflows ahead of tooling and fixturing availability.
- Developed an internal engineering platform integrating BOM, Teamcenter, and Notion data to centralize 2,000+ parts across 15+ modules, including revisions, risks, and BOM issues.
- Developed NX scripts to automate bounding-box and volumetric data extraction for 2,000+ SN0 components, saving 60+ hours while supporting CMM sizing, component weight estimation, and build card development.

### GW MICROPROPULSION AND NANOTECHNOLOGY LAB

Summer Research Intern

Washington, DC

06/2025 - 08/2025

- Collaborated on the development and fabrication of  $\mu$ CAT plasma thruster prototypes, streamlining manufacturing processes to reduce build time by ~30%.
- Designed and produced a scalable torsional thrust stand for small-scale electric propulsion systems capable of measuring Newton-level thrust.
- Integrated a voice-coil calibration system to replace electromagnetic combs, expanding direct measurement range  $\sim 50,000\times$  from 30  $\mu$ N to 1.5 N and eliminating the need for imprecise extrapolation.
- Operated high-vacuum chambers to conduct experiments, including pump-down procedures and leak checks.

### GW BAJA SAE | Automotive Student Design Team

Drivetrain Lead

Washington, DC

07/2025 - 06/2026

- Redesigned the 4WD power-transfer system from chain to prop shaft, eliminating the engagement clutch and chain-related reliability issues while optimizing gear ratios around a COTS overrunning front differential.
- Utilized tensile testing data to optimize gear parameters, decreasing MOI by 26% while sustaining FOS of 1.5
- Redesigned wheel hubs from a two-piece 6061-T6 hub and 7075-T6 spline adaptor assembly into a single-piece 7075-T6 component, reducing component count by 50% while improving structural integrity.
- Developed an in-house CNC broaching process for internal spline manufacturing using COTS CV-joint spline geometry data, reducing spline manufacturing lead time from weeks to hours while enabling repeatable in-house production.

Team Captain

06/2024 - 06/2025

- Led a 30+ member team through the design, fabrication, and testing of an off-road vehicle for the Baja SAE competitions.
- Designed and manufactured a dog clutch and actuator system to enable shifting between two- and four-wheel drive modes.
- Iterated upon a custom 2-stage reduction gearbox to increase torque output by 26% while improving rear packaging.
- Managed a \$40,000 budget and served as primary point of contact for manufacturing and outsourcing of custom components across university and third-party facilities.
- Led team in the 2025 Maryland Baja SAE competition, finishing 20 places higher than the previous year.

### GW MACHINE SHOP

Student Machinist

Washington, DC

10/2024 - Present

- Sole operator of a Haas Mini Mill 2 CNC machine, machining 30+ components for research and student projects.

## ADDITIONAL

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**Design Programs:** SolidWorks (CAD/FEA), AutoCAD, Fusion 360 (CAD/CAM), Inventor, Blender

**Technical Skills:** DFM, DFA, CNC Machining, Manual Machining, 3D printing, Welding

**Awards/Certificates:** CSWA (Certified SolidWorks Design Associate), Dean's List, Presidential Scholarship

**Programming Languages:** Python (Pandas, NumPy, Matplotlib), Java, C