

IAN WOOLSTON

Aerospace & Mechanical Engineering Student

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SUMMARY

Aspiring aerospace engineer with hands-on experience in non-destructive testing, propulsion system design, CAD/CAM, and engineering simulation. Founder of a high school aerospace research program and lead on a multi-fuel hybrid rocket engine project spanning structural analysis, CFD, and machining. Comfortable taking projects from first-principles calculation through fabrication and test.

EXPERIENCE

Founder & President — Kinnick Aerospace Program *2025 – 2026*

Nile C. Kinnick High School, Yokosuka, Japan

- Founded and led a student program supporting research in rocket propulsion, aerodynamics, and systems engineering.
- Built a mentorship pipeline pairing students with experienced SRF engineers for real manufacturing support and hands-on guidance.
- Secured funding for curiosity-driven student projects and transitioned leadership to ensure program continuity.

Recreation Assistant / Lifeguard — MWR *May 2026 – Present*

Morale, Welfare & Recreation, Yokosuka, Japan

- Provided customer service, water safety supervision, and lifesaving response in a high-traffic recreation facility.
- Co-coordinated an inter-organization boat racing event tied to an AP Physics project, bridging workplace and academic teams.

Teacher Assistant *2024 – 2025*

Sullivans Elementary School, Yokosuka, Japan

- Assisted instruction for second- and fourth-grade students throughout the school week.
- Developed communication, task management, and team-coordination skills in a structured environment.

Construction Volunteer *2024 – Present*

Appalachia Service Project (ASP) — West Virginia / Tennessee

- Served annually on construction crews repairing homes in under-resourced communities, including structural and flooded-crawlspace repairs.

ENGINEERING PROJECTS

Hybrid Rocket Engine — Design, Analysis & Fabrication *2025 – Present*

- Designed a paraffin-wax hybrid rocket engine using a stainless steel (304 SS) combustion chamber, with kerosene-additive fuel-grain exploration.
- Performed first-principles structural analysis (Lamé equations, safety factors) to size chamber wall thickness against calculated operating pressures.
- Ran structural FEA and CFD turbulence modeling in SimScale (k- ω SST model), troubleshooting boundary conditions and mesh quality.
- Wrote Python scripts for nozzle design and analysis; maintained the project on GitHub
- Modeled the engine assembly in Fusion 360 and sized a compressed-air oxidizer system, comparing storage and regulation strategies for practical volume.
- Bench-tested fuel configurations using air, propane, and a paraffin-kerosene mixture.

5-Axis 3D Printer — State Science Fair (3rd Place, NC State)*2024 – 2025*

- Led a team to 3rd place at the North Carolina State Science Fair in Raleigh.
- Programmed conical-division modeling software to integrate two additional motion axes into a standard 3-axis printer.
- Owned the software-to-hardware integration, translating custom geometry generation into machine motion.

EDUCATION

Nile C. Kinnick High School — Yokosuka, Japan*Graduated 2026*

- Graduated with Honors; AP Scholar Award; National Honor Society member; President's Award (4.0+ GPA).
- Completed 11 Advanced Placement courses, including AP Calculus BC and AP Physics 1.
- Coursework foundation: Calculus II and Physics I.

TECHNICAL SKILLS

CAD / CAM: AutoCAD, Fusion 360, parametric modeling, auto-generated geometry

Simulation: SimScale (FEA, CFD), k- ω SST turbulence modeling, structural stress analysis

Programming: Python (engineering scripts, geometry generation), Git/GitHub

Fabrication: CNC machining (G-code), 3D printing, woodworking, hands-on prototyping

Engineering: Non-destructive testing (NDT/NDE), propulsion design, systems engineering, physics

CERTIFICATIONS & LANGUAGES

- American Red Cross — Lifeguard / First Aid; Bloodborne Pathogens Certification
- Languages: English (native); Mandarin Chinese (learning)