

ARDA ALPAN

571-992-4490 | euk3vm@virginia.edu | Charlottesville, VA | Vienna, VA

EDUCATION

University of Virginia

B.S. Mechanical Engineering GPA 3.975/4.0

Aug 2025 – May 2029

Charlottesville, VA

Flint Hill School

High School Diploma GPA 4.45/4.0 Cum Laude Society

Aug 2021 – June 2025

Oakton, VA

RESEARCH EXPERIENCE

CFD & Propulsion Laboratory, UVA (Dr. Xinfeng Gao)

Oct 2025 – Sep 2026

Undergraduate Researcher (paid), SAGEST Center (DOE/NNSA PSAAP IV)

Charlottesville, VA

- Contributed to SAGEST, a DOE/NNSA PSAAP IV Predictive Simulation Center advancing exascale predictive simulation with verification, validation, and uncertainty quantification.
- Generated fully structured, pure-hexahedral multiblock meshes of a Mach 12+ biconic reentry vehicle in Fidelity Pointwise for a 4th-order finite-volume solver, satisfying conformal face-mapping and edge-sizing constraints.
- Built a $\sim 1\text{M}$ -cell hybrid prism-tetrahedral comparison mesh in ANSYS with $y^+ \approx 1$ inflation layers as a control case isolating the effect of a geometry approximation on the resolved flowfield.
- Ran benchmark hypersonic simulations in ANSYS Fluent (density-based, AUSM, Spalart-Allmaras) to validate shock structure; diagnosed and justified a geometry-defeaturing approximation resolving a degenerate flap-hinge topology.
- Built and iterated SolidWorks CAD of the vehicle; delivered weekly research presentations to the lab in LaTeX/TikZ/Beamer.

Smithsonian National Museum of Natural History

Apr 2025 – May 2025

Research Intern, Paleobiology / Data Analysis

Washington, D.C.

- Separated and identified planktic/benthic foraminifera; analyzed assemblage shifts across stratigraphic layers to support evolutionary interpretations of extinction aftermath.

Independent Research Project, Flint Hill School

Aug 2024 – Mar 2025

Independent Researcher

Oakton, VA

- Meta-analyzed paleontological databases on reptile extinction vs. avian origination after the K-Pg event; defended results before a faculty board and published in the school science forum.

George Mason University, Inst. for Advanced Biomedical Research

Mar 2024 – Apr 2024

Research Intern & Lab Assistant, Biochemical Engineering

Manassas, VA

- Cleaned and analyzed large clinical datasets in R; operated mass spectrometry equipment for protein analysis.

ENGINEERING PROJECTS & DESIGN TEAMS

Virginia Motorsports — Wing Design Sub-Team

Aug 2025 – May 2026

- Designed and iterated front-wing airfoil geometries in Fusion 360; ran parametric CFD in ANSYS to evaluate angle-of-attack performance and identify optimal aerodynamic configurations.
- Contributed to full-vehicle airflow analysis, modeling braking and acceleration cases via front/rear ride-height changes.

Hoos Flying — Aero Design Sub-Team (prev. Fuselage Design Sub-Team)

Aug 2025 – Present

- Lead CFD analysis in the team's iterative design-analysis loop, quantifying aerodynamic performance and flow behavior across aircraft configurations to inform main-body airfoil and wing design decisions.
- Fuselage (2025–26): contributed to concept development in a 10-person sub-team defining fuselage requirements.

Independent Aircraft Design & Build

June 2020 – Dec 2024

- Designed and hand-built wood aircraft as a self-directed aeroelasticity and materials project; informed structural choices with a DCS flight-simulation study of flat-spin behavior.

LEADERSHIP

Music Service Club, Flint Hill School

Aug 2022 – May 2025

Founder & President

Oakton, VA

- Founded and led a 20+ musician service ensemble; organized 5+ community performances end-to-end.

Student Council Association, Flint Hill School

Aug 2022 – May 2024

Head of Communications & Student Life

Oakton, VA

- Co-led Constitution Committee; launched multi-channel communications improving event turnout $\sim 15\text{--}30\%$.

TECHNICAL SKILLS

CFD & Simulation: ANSYS Fluent, Fidelity Pointwise (structured meshing), CFD-Post; hypersonic/compressible flow, shock and boundary-layer analysis

CAD & Computing: SolidWorks, Fusion 360, AutoCAD, Blender; Linux/HPC workflows (SAGEST cluster), LaTeX/TikZ/Beamer, R (basics), Excel

Lab & Languages: Mass spectrometry, microscopy, technical writing; English, Turkish, French (academic proficiency)

ACTIVITIES

Virginia Sailing Race Team · AIAA · Hoos Flying · Virginia Motorsports · Outdoors Club · Barbell Club