

Junipero Verbeke

 github.com/JVTou  juniperooverbeke.me  linkedin.com/in/junipero-verbeke  juniperooverbeke@gmail.com

Highly motivated Applied Physics graduate (B.S. June 2025) and M.S. Aerospace Engineering candidate (June 2027) with a strong foundation in thermodynamics, fluid dynamics, and classical mechanics. Proven ability in developing physics-based simulations (Python, MATLAB), conducting hands-on experiments, and data analysis. Eager to apply these skills to challenges in HVAC, refrigeration, and thermal systems modeling. Experienced in CAD, custom fabrication, and dynamic system simulation.

EDUCATION

San Jose State University <i>M.S. Aerospace Engineering</i>	June 2027
University of California, Santa Cruz <i>B.S. Applied Physics</i>	June 2025
Etoile du Matin - Eguelshardt, France <i>French Baccalaureate - Mention très bien</i>	June 2020

COURSEWORK

Courses: Advanced Classical Mechanics (included Lagrangian/Hamiltonian dynamics), Object-Oriented Programming, Feedback Control Systems, Linear Algebra, Vector Calculus, Differential Equations, Statistical Mechanics, Quantum Physics, Thermodynamics

PROJECTS

Physics-Based Numerical Modeling of Dynamic Systems <i>Python, NumPy, Matplotlib, MATLAB</i>	Nov. 2023
<ul style="list-style-type: none">Developed physics-based numerical models for complex dynamic systems (e.g., double pendulum) from first principles (Lagrangian mechanics).Implemented and solved systems of differential equations using numerical methods (e.g., RK4, Euler) in Python (NumPy) and MATLAB, visualizing system behavior with Matplotlib.Analyzed computational efficiency of different numerical solution techniques, a skill transferable to 1D thermal modeling and simulation.	
Aerodynamic Analysis and Fluid System Validation <i>Physics Lab (PHYS 134), XFLR5</i>	March 2025
<ul style="list-style-type: none">Investigated fundamental fluid dynamic principles using experimental setups including Pitot tubes, Venturi tubes for pressure/velocity measurements, and airfoil lift analysis in a wind tunnel.Collected and analyzed experimental fluid system data, validating results against theoretical fluid dynamics principles (e.g., Bernoulli, Navier-Stokes concepts) and XFLR5 simulations to assess model accuracy.Designed and executed experimental protocols for fluid systems, including sensor data acquisition (pressure, velocity) and rigorous error analysis.Gained insights into practical challenges in aerodynamic/fluid system testing, including boundary layer effects and turbulence phenomena.	
veritas-inc.com <i>Astro, HTML/CSS, React, APIs (Google Maps, SendGrid), Git, Unix Shell, VS Code</i>	Jan. 2024
<ul style="list-style-type: none">Renovated a company website, developing a full-stack web pageLearned how to use Javascript in conjunction with APIs and ESM modules	

Custom Mechatronic Systems Design & Fabrication | *Personal Business; CAD, Controls* June 2020 – Present

- Designed, modeled (Blender, Fusion360), and fabricated custom mechanical components for various projects using 3D printing (GCODE), CNC, and water jet cutting techniques.
- Assembled, programmed, and tuned 4 FPV drones, involving integration of electric motors, power distribution, flight controllers (e.g., Betaflight), and radio control systems.
- Gained practical experience with basic motion control principles, sensor integration, and embedded system programming for drone performance in competitive events.

Veritas Managed Solutions, inc. | *Applied Engineer* June 2021 – Present

- Planning and estimating 80+ security projects, including Tesla Gigafactories Sparks and Austin
- Spearheaded the formation of the engineering team, directly enabling new lines of business in security projects that contributed to Veritas's revenue growth in this sector from \$10M to \$28M; authored 5 universal guides for technician system implementation.
- Worked on security floor plans using AutoCAD and in-house tools
- Created 3D animations in Blender for publicity

St. Thomas More School | *Volunteer* Sept. 2022 – Present

- Maintenance of St. Thomas More School's computer network and media rooms, maintaining Sunday mass streams
- Filmed and photographed events using Canon cameras, DJI drones and microphones, then editing with DaVinci Resolve, Adobe Premiere Pro and Photoshop

SKILLS

Core Engineering Principles: Thermodynamics, Fluid Dynamics, Heat Transfer (coursework), Classical Mechanics, Electrical Fundamentals (FPV drone systems)

Programming Languages: Python, MATLAB, \LaTeX , JavaScript, HTML/CSS

Simulation & Modeling: Physics-based simulation (Python/NumPy, MATLAB), XFLR5 (Aerodynamic/Fluid Flow Simulation), Simulink, Dynamic Systems, Numerical Methods, Data Analysis & Visualization (Matplotlib)

Software & Tools: Git/GitHub, Unix Shell, VS Code, AutoCAD, Fusion360 (CAD), Blender

Fabrication & Experimental: 3D Printing (GCODE), CNC, Water Jet Cutting, Experimental Design, System Calibration, Data Acquisition

Hardware (FPV Drones): Electric Motors, Power Distribution, Flight Controllers, Basic Control Circuits, Sensor Integration

Libraries/Frameworks: NumPy, Matplotlib

Learning Aptitude: Quickly learns new technical software; eager to develop proficiency in industry-standard CFD/thermal tools (e.g., Ansys Fluent, STAR-CCM+, FloTHERM).