



# Junipero Verbeke

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## EDUCATION

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

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

## EXPERIENCE

<b>Custom Mechatronic Systems Design &amp; Fabrication</b>   <i>Personal Business; CAD, Controls</i>	June 2020 – Present
<ul style="list-style-type: none"> <li>Designed, modeled (Blender, Fusion360), and fabricated custom mechanical components for various projects using 3D printing (GCODE), CNC, and water jet cutting techniques.</li> <li>Assembled, programmed, and tuned 4 FPV drones, involving integration of electric motors, power distribution, flight controllers (e.g., Betaflight), and radio control systems.</li> <li>Gained practical experience with basic motion control principles, sensor integration, and embedded system programming for drone performance in competitive events.</li> </ul>	

**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

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

**Programming Languages:** Python, MATLAB,  $\text{\LaTeX}$ , 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