

Cassidy Vetovec

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cassidyvetovec.com (ePortfolio) – <https://www.linkedin.com/in/cassidy-vetovec-0a439b305/>

EDUCATION

University of Florida, Gainesville, FL

Bachelor of Science in Mechanical Engineering, Senior

Expected May 2027

Bachelor of Science in Aerospace Engineering, Senior

Expected May 2027

Minor in Mathematics, Senior

Expected May 2027

Current GPA: 3.92 / 4.00

RELEVANT WORK AND RESEARCH EXPERIENCE

Mechanical Engineering Intern, Aqwest LLC

Summer 2024 – Present

- Independently designed Deep Learning AI systems to optimize laser performance for U.S. Navy anti-submarine warfare and undersea imaging applications.
- Independently developing contracted backend algorithms and a frontend GUI to rapidly optimize and evaluate laser design for generalized laser varieties using DL for the U.S. Navy.
- Co-hosted a technical customer briefing (U.S. Navy) and independently presented contributions.
- Presented at SPIE Photonics West, January 2026 on Deep Learning AI in laser design, attended SPIE in previous years.
- Developed pipeline for laser beam jitter control for high-power lasers in harsh environments using nonlinear control and DL for modeling and actuation, for a U.S. Navy contract.
- Designed a large portable shaker testbed for testing beam jitter control methods on in-lab high power lasers.
- Developed GUI and backend methods to predict beam quality from limited beam image inputs.
- Delivered technical lectures and presentations on research progress, background, and proposed advancements.
- Authored and edited million-dollar photonics and optics research proposals and reports, to customers including the Department of War, Department of Energy, NSF, the U.S. Navy, and U.S. Air Force. Performed basic retrospective contract accounting.
- Manufactured precision optical-quality components in a machine shop for R&D and deliverable products.
- Assisted in assembling and troubleshooting laser water-cooling systems for clean-room environments.

Undergraduate Researcher, SYBORGS UF

Fall 2024 – Present

- Designed a controlled pressure vessel and its electrical system intended for orbital deployment with biological samples.
- Designed and fabricated precision biotech components using CNC machines, lathes, and mills, with SolidWorks and Fusion 360 for CAD/CAM. Designed electrical systems for sensing, actuating, and controlling using custom PCBs designed with KiCad.
- Programmed and integrated Arduino and Python systems to operate a low-gravity-simulating bioreactor.
- Mentored undergraduate assistant in CNC machining, CAM programming, and biotech project fundamentals.
- Designed 6-axis robotic arm for a self-colonizing and self-replicating robotic celestial payload.

Independent Research and Projects, UF

Fall 2025 – Present

- Developing financial analytic models for ETF, equity-index prediction, and volatile assets using various Deep Learning AI models, including PINNs applied to the Black-Scholes PDE. Developed volatility models for options chain pricing evaluation. Initial modeling focused on SPY.
- Designed and built an interactive celestial mechanics and astrodynamics platform in JavaScript/Three.js using ephemeris and environmental data from JPL Horizons, NOAA, and other APIs and using other orbital mechanics calculations. Derived and modeled gravitational wave (GW) visual deformative effects, modeled NASA LISA satellites (used to measure GWs in 2030)

SOFTWARE AND TECHNICAL SKILLS

CNC and CAM with FUSION, Extracurricular Course through University of Florida; Research experience

November 2024

SolidWorks and GDT, Academic Certification; Research Experience

November 2022

KiCad, Research Experience

September 2025

MATLAB, Proficiency through the University of Florida; Research Experience

December 2023

Python, JavaScript, Proficiency through the University of Florida; Research/Project Experience

July 2024

LabView, Proficiency through the University of Florida

November 2025

COMSOL Multiphysics, Introductory Course through Aqwest LLC

June 2023

RELEVANT COURSEWORK

Partial Differential Equations, Modeling and solving PDE-governed systems

Spring 2025

Compressible Flow, Supersonic fluid dynamics with emphasis on aerospace engineering

Fall 2025

Aerospace Engineering Design II, Developing the autopilot control system for a large rc aircraft

Fall 2025

UNIVERSITY AWARDS

Herbert Wertheim College of Engineering Dean's List, Freshman, Sophomore, Junior, Senior

February 2023-2026

PROFESSIONAL AFFILIATIONS

FAA-Certified Student Pilot

June 2023