


Tim Mascal

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🛡 Security Clearance: Active Secret

EDUCATION

Bachelor of Science in Mechanical Engineering

Embry-Riddle Aeronautical University 
GPA: 3.91

08/2021 – 05/2025
Daytona Beach, FL

Accelerated Master of Science in Systems Engineering

Embry-Riddle Aeronautical University

09/2024 – present
Daytona Beach, FL

SKILLS

Mechatronics

Hands-on project experience integrating software, electrical, and mechanical systems, providing a strong foundation in mechatronics and robotics technology.

Modern Control Systems

Experience designing linear control systems using **State-Space Feedback** and PID-based solutions.

Python

Four years of experience in extracurricular projects, specializing in autonomous systems with libraries like **OpenCV**, **NumPy**, and **ROS**. Utilized **NumPy** and **Matplotlib** for data analysis and acoustic model development during an internship.

Computer Vision

Extensive experience with **OpenCV** and practical knowledge of **TensorFlow 2**, **PyTorch**, and **YOLO algorithms** for object detection and image processing.

MATLAB and Simulink

Utilized MATLAB extensively for data analysis, visualization, and interfacing with datasets in academic and internship settings. Experienced with MATLAB toolboxes for dynamic system simulations in vibrations, **classical controls**, and **modern controls**.

CAD

Proficient in CatiaV5 through coursework and projects; experienced with SolidWorks, Autodesk Inventor, and Fusion 360 through extracurricular applications.

Systems Engineering

Applied systems engineering principles while managing two large projects as President of AMRA, including work breakdown structures, system architecture diagrams, trade-off studies, and budget and schedule forecasting.

PROFESSIONAL EXPERIENCE

Engineering Intern

NSWC, Carderock Division, Combatant Craft Detachment

Brayden Duffy: (e) braidan.d.duffy.civ@us.navy.mil, (c) +1 (303) 709-4048

05/2024 – 07/2024
Norfolk, VA

- **Developed and integrated autonomy system** on a full scale US Navy Autonomous Unmanned Surface Vehicle.
- Demonstrated autonomous navigation capabilities of the USV.

Engineering Intern

NSWC, Carderock Division, Acoustic Signatures Division

Dr. Anthony Bonomo: (e) anthony.l.bonomo.civ@us.navy.mil (c) +1 (609) 529-9910

05/2023 – 08/2023
Bethesda, MD

- Investigated viability of novel acoustic simulation models using **ML methods**.
- Analyzed experimental model using canonical test functions and full factorial models.

Student Researcher

Advanced Dynamics and Controls Lab

- Contributed to the development and testing of a computer vision model for autonomous satellite rendezvous, exploring **AI/ML** techniques to estimate object orientation and relative position from monocular images.

05/2022 – 08/2022
Daytona Beach, FL

Electro/Mechanical Technician

Anton-Paar QuantaTec

01/2021 – 08/2021

Boynton Beach, FL

- Cooperated with company Engineers to modify procedures resulting in **increased quality and efficiency in the manufacturing and assembly processes.**
- Reduced product assembly time by 60%.

EXTRACURRICULAR EXPERIENCE

President

Autonomous Maritime Robotics Association

Daniel Penny: (e) pennyd@erau.edu, (c) +1 (321) 446-4383

02/2022 – present

Daytona Beach, FL

- Led and **mentored a 49-member undergraduate robotics team**, overseeing systems development, risk management, and project execution across two key projects. Managed a \$31,000 annual budget, secured a **400% funding increase**, and **expanded membership by 600%**, fostering a high-performance engineering team.
- Optimized competition performance by implementing data-driven process improvements that **increased scoring performance by 400%**. Coordinated cross-functional teams, travel logistics, and equipment transport, ensuring seamless system integration and operational success at national robotics competitions.
- Submitted successful **CAPEX proposals** for \$7,200 and \$4,000 values.

Volunteer CFR

Embry-Riddle Emergency Response Team

- Provided emergency medical care to on-campus students.

09/2021 – 09/2024

Daytona Beach, FL

PROJECTS

Project Watney

Mechanical Engineering Robotics Track Senior Design Project

08/2024 – 05/2025

- **Developed an autonomous UGV** using ROS2 and computer vision to enable plant data collection and environmental monitoring.
- Developed the Computer Vision System to validate collected image samples.

Project Hammerhead

AUVSI RoboSub Competition Robot Version 2

09/2023 – present

- Designed AUV hull using design for manufacturing and assembly principles and facilitating its manufacture.
- Designing **State-Space Feedback Control System**.
- Performed the project budgeting, scheduling, work breakdown structure, and requirement design.
- Outlined the 4-year development cycle.

Project Nautilus

AUVSI RoboSub Competition Robot

02/2022 – 08/2023

- Designed, integrated, tested, and tuned a PID based control systems for mobility in 6-degrees of freedom.
- Led the development of Nautilus during the last year of its development cycle.
- **Gained foundational experience in computer vision techniques** for navigation using only camera data, exploring image-based localization and object detection methods.

Project Mako

MateROV Competition Robot

09/2022 – present

- Founded the project team, and facilitated the development of a Remotely Operated Vehicle for underwater exploration by acquiring funding and organizing a team of members to work on the project.
- Modify the PID-based control system from Nautilus for use on Project Mako.