

Carmen Lucca DiMario

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EDUCATION

Embry-Riddle Aeronautical University (ERAU)

Graduation:

Master of Science in Computer Science

GPA: 4.0

May 2027

Bachelor of Science in Computer Science

GPA: 3.97

May 2026

TECHNICAL SKILLS

Programming Languages: C, C++, Swift, Python, Bash, GNU ASM, Go, TypeScript, Java, SQL, Rust

Embedded Systems: STM32 Microcontrollers, Clang, ARMcc, NVIDIA Jetson Hardware, ROS2, TensorRT

Development Frameworks: Agile, Scrum

Tools and Technologies: UNIX, Linux, macOS, Git, AWS, I2C/SPI (STM32)

PROFESSIONAL EXPERIENCE

Garmin: Embedded Software Development Intern

May 2026 - August 2026

- Migrated a legacy embedded library to a modernized codebase, identifying and resolving compatibility issues across compiler and runtime environments
- Implemented Clang compiler support as a replacement for legacy ARMcc toolchains, modernizing the build for avionics firmware
- Extended embedded library support for 64-bit architectures, resolving data type alignment and pointer-width issues to broaden platform compatibility
- Developed a system test suite for the communication interface of a Garmin Integrated Avionics Unit (GIA), validating real-time engine metric transmission and protocol correctness under embedded constraints

JRC Integrated Systems: RISE Intern/CO-OP Participant

June 2025 - May 2026

- Developed and optimized software tools for radiation-hardened semiconductor testing
- Upgraded Accuro's PETSc integration across a major version boundary to enable GPU-accelerated solvers for the differential equations at the core of its simulation
- Analyzed an advanced C/C++ codebase to characterize differences in Linear Energy Transfer (LET) through various substrates
- Rebuilt the Accuro test framework around legibility and failure diagnosis, replacing a suite that reported failures without identifying their cause

PROJECT EXPERIENCE

Engineering Physics Propulsion Laboratory: AIRHOUND [Middleware Lead]

September 2024 - May 2026

- Designed a modular three-node ROS2 pipeline converting YOLOv8 detections to yaw commands via pinhole camera intrinsics, publishing to a PX4 flight controller over Micro XRCE-DDS
- Optimized YOLOv8 with NVIDIA TensorRT for embedded deployment on a Jetson Orin, enabling real-time onboard inference
- Validated the full software stack via a 600-second SITL test, sustaining 30 Hz throughput across all pipeline stages

RoboRacer Autonomous Racing: Software Lead

August 2025 - May 2026

- Assembled and tuned an autonomous vehicle platform from components, integrating compute, sensors, and motor controller into a competition-ready system
- Brought up and configured the full ROS2 software stack on the onboard computer
- Deployed and validated an end-to-end autonomy stack from sensor input through planning to actuation under real competition conditions

PUBLICATIONS

DiMario, C., Bacha, R., & Butka, B. "Combating Senior Scams Using a Large Language Model-Created Rubric." ASSE '24, ACM, 2024. <https://doi.org/10.1145/3702138.3702140>

Malarchick, R. et al. (incl. DiMario, C.) "Robust Real-Time UAV Target Tracking with Onboard Vision-Based Yaw Control." Beyond: Undergraduate Research Journal, Vol. 9, 2025. <https://commons.erau.edu/beyond/vol9/iss1/6>

EXTRACURRICULAR ACTIVITIES

- **ERAU Division II Cross-Country/Track:** 7-8 practices, approximately 30 hours, weekly
- **FAA Licenses:** Part 107 Remote Pilot Certification

<https://dimario.dev>