

Carmen Lucca DiMario

(484) 467-2466

github.com/luccadimario

luccadimario@gmail.com

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: Python, C++, Java, JavaScript, TypeScript, Go, C, Swift, SQL, Bash, Rust

Systems & Distributed: Linux, UNIX, P2P Networking, REST APIs, PostgreSQL, Git, AWS

ML & AI: PyTorch, Stable-Baselines3, Gymnasium, TensorRT, NumPy

PROFESSIONAL EXPERIENCE

Garmin: Embedded Software Development Intern

May 2026 - August 2026

- Implemented Clang compiler support as a replacement for legacy ARMcc toolchains
- 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 a proprietary avionics communication interface, validating real-time metric transmission and protocol correctness under embedded constraints

JRC Integrated Systems: RISE Intern/CO-OP Participant

June 2025 - May 2026

- Rebuilt the Accuro test framework around legibility and failure diagnosis, replacing a suite that reported failures without identifying their cause
- 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
- Evaluated field separation strategies and alternative solving methods to improve simulation efficiency

PROJECT EXPERIENCE

Dilithium: Post-Quantum Cryptocurrency

January 2026 - Present

- Built a peer-to-peer proof-of-work blockchain from first principles in Go (node, wallet CLI, and CPU/GPU miner), signing every transaction with CRYSTALS-Dilithium Mode3 (NIST FIPS 204, Level 3) for quantum-safe security from block zero
- Implemented competitive mining across a live P2P network with automatic block and transaction synchronization
- Exposed a REST API with UPnP port forwarding and cross-platform builds for Linux, macOS, and Windows

SEMBAS-RL: Graduate Research, Autonomous Driving Policy Assurance

June 2026 - Present

- Built three analysis agents that convert boundary-scan geometry into ranked retraining proposals automatically, removing the manual analysis step between training iterations
- Trained and evaluated ten reinforcement learning driving policies across two algorithms (PPO, SAC) and five curriculum strategies over 1.7M+ training steps
- Extended an adaptive boundary scanner to RL policy evaluation over a 3D scenario space, wired to a simulator as a socket service returning deterministic PASS/FAIL labels

PFactor: iOS Application

August 2025 - Present

- Built and shipped an iOS application in Swift and SwiftUI with a real-time voice interaction loop backed by LLM APIs
- Architected a serverless backend handling authentication, subscriptions, and graceful offline degradation via automatic local-scoring fallback

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 Cyber Rodeo 2026:** First place individual
- **ERAU Division II Cross-Country/Track:** 7-8 practices, approximately 30 hours, weekly
<https://dimario.dev>