

# Jack P. DeMarinis

Montgomery, MA — (413) 265-5165 — jackdemarinis9232@gmail.com — jackdemarinis.com

## Summary

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Robotics-oriented computer engineer with experience working on Linux-based software systems for autonomy-adjacent robotics, perception pipelines, and real-time data processing. Hands-on experience integrating ROS-based robotics components, sensor streams, and state estimation outputs into larger software systems. Strong background in C++ and Python development on Linux, system debugging, and validating software behavior under real-world constraints, with additional experience in applied machine learning and AI-assisted decision systems.

## Education

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**University of Rhode Island**, Kingston, RI Expected May 2026  
M.S. Electrical Engineering (Accelerated B.S./M.S. Program)  
GPA: 4.00 / 4.00

**University of Rhode Island**, Kingston, RI May 2025  
B.S. Computer Engineering  
Minor: Mathematics  
GPA: 3.90 / 4.00

## Technical Skills

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**Languages:** C++, Python, C, Bash, JavaScript, MIPS Assembly, LC-3

**Robotics / Autonomy:** ROS / ROS2, SWARM, real-time sensor data processing, odometry integration, RGB-D camera streams, exposure to SLAM pipelines, coordinate frames, and state estimation outputs

**Computer Vision / ML:** OpenCV, PyTorch, Hugging Face Transformers and Datasets

**Systems:** Linux, Docker, embedded Linux development, REST APIs (Flask), asynchronous pipelines, debugging, logging, and instrumentation

**GenAI / Decision Systems:** LLM APIs (OpenAI, Gemini), agentic architectures, tool calling, retrieval-augmented generation (FAISS), structured outputs (JSON schemas), evaluation harnesses (latency, cost, quality)

**Tools & Design:** Unity, Fusion 360, AutoCAD, MATLAB, Multisim, Mathcad, VHDL, OpenMV IDE

## Experience

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**Graduate Research Assistant** Sep 2025 – Present  
University of Rhode Island, Kingston, RI

- Worked on SWARM simulation through Unity using decision-making pipelines, emphasizing reliability, observability, and fault handling.
- Developed VR simulation environments to exercise system behavior.
- Implemented reproducible Docker-based workflows to support consistent builds, testing, and deployments across machines.

**Undergraduate Research Assistant** May 2024 – Aug 2025  
University of Rhode Island, Kingston, RI

- Built and evaluated backend software components supporting LLM decision workflows.
- Developed and tested custom RAG pipelines for context management using FAISS and BM25-based retrieval (vector and keyword search).
- Created evaluation scripts to compare LLM variants using consistent test sets and measurable latency, cost, and output-quality criteria.

**Computer Engineering Intern** May 2024 – Jan 2025  
Electro Standards Laboratories, Cranston, RI

- Developed Python and C software on embedded Linux platforms supporting hardware-interfacing systems.
- Debugged and resolved electrical and software integration issues using instrumentation, logging, and structured root-cause analysis.
- Produced technical documentation improving long-term maintainability and engineering handoff.

### **Software Engineering Intern**

Jun 2023 – Dec 2023

IGT, West Greenwich, RI

- Diagnosed Linux system issues using low-level command-line tools and systematic debugging techniques.
- Developed Bash, C, and C++ code for device-level integrations and internal engineering tools.
- Implemented and validated OCR pipelines with robustness checks for production environments.

## **Selected Projects**

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### **LLM Robotics**

- Built and simulated a mobile robot using ROS, integrating odometry and RGB-D camera data streams.
- Worked with SLAM-generated localization and mapping outputs to support downstream state awareness.
- Designed ROS nodes to preprocess sensor data and publish structured state representations for consumption by higher-level software.

### **Senior Capstone: Robotic Assembly & Inspection**

- Designed an automated PCBA assembly and inspection workstation integrating computer vision, robotics, and control software.
- Implemented software orchestration across sensing, actuation, and inspection stages, validated through iterative testing.

### **AI Meeting Assistant**

- Built an end-to-end software pipeline including real-time transcription, summarization, and structured action extraction.
- Designed the backend for robustness with retries, validation, and explicit failure handling under real-world usage.

## **Activities & Honors**

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Dean's List (every semester)

Raymond M. Wright FastTrack Scholarship (2025–2026)

URI Wrestling Team

Accelerated B.S./M.S. Program Admit