Jack P. DeMarinis

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Summary

Computer engineer with experience building production-grade software systems spanning backend services, AI-enabled workflows, and robotics-adjacent applications. Skilled in designing reliable, maintainable pipelines on Linux using Docker, APIs, and asynchronous processing patterns. Background includes applied machine learning, speech and language processing, and system integration, with a strong focus on practical evaluation, debugging, and delivering software that performs reliably in real-world use.

Education

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

GenAI / LLM: OpenAI API, Gemini API, LangChain, agentic architectures, tool calling, MCP servers, retrieval-augmented generation (RAG), embeddings, vector search (FAISS), structured outputs (JSON schemas), prompt engineering, evaluation harnesses (latency, cost, quality checks), local small language models (local inference and serving)

Languages: Python, C++, C, Bash, JavaScript, HTML/CSS, MIPS Assembly, LC-3

Backend / Systems: Linux, Docker, REST APIs (Flask)

ML / AI: PyTorch, Hugging Face Transformers and Datasets

Robotics / Simulation: ROS / ROS2 real-time data processing

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

Experience

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

- Designed agentic, multi-step decision pipelines with tool calling and structured outputs to improve reliability across complex workflows.
- Built reusable MCP-style tool interfaces connecting LLMs to external services and internal utilities.
- Developed simulation environments to test agent coordination, failure modes, and latency-sensitive behaviors.
- Implemented reproducible Linux and Docker workflows to support consistent builds and deployments across machines.

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

- Built LLM features using RAG (embeddings and FAISS retrieval), improving factual grounding across evaluation prompts.
- Developed and shipped backend services (Flask/REST) supporting AI workflows handling hundreds of requests per day.
- Created evaluation scripts to compare model and prompt 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, improving system reliability through repeatable test routines.
- Diagnosed and resolved electrical and software issues using structured debugging, instrumentation, and logging.
- Produced clear technical documentation to improve maintainability and team handoff.

Software Engineering Intern Jun 2023 – Dec 2023
IGT, West Greenwich, RI
- Resolved Linux system issues using low-level command-line debugging and root-cause analysis.
- Developed Bash, C, and C++ code for device-level integrations and internal tooling.
- Implemented OCR pipelines and validation checks to improve system accuracy and robustness.

Selected Projects

AI Meeting Assistant
- Built an end-to-end meeting intelligence pipeline including real-time transcription, summarization, and structured action extraction.
- Integrated Soniox speech-to-text (STT) for low-latency transcription feeding downstream LLM processing.
- Implemented structured outputs (JSON schemas) to generate consistent action items, agenda points, and notes for integrations.
- Designed the backend as a resilient pipeline with retries, validation, and explicit failure handling.

Agentic RAG Chatbot
- Built an agentic RAG system combining embeddings and FAISS retrieval with tool calls for grounded, actionable responses.
- Exposed external utilities and services through MCP-style tooling interfaces.
- Deployed as a Dockerized Flask API emphasizing reproducibility, logging, and measurable evaluation of outputs.

LLM Robotics
- Built and simulated a mobile Waffle robot using ROS, integrating odometry and RGB-D camera streams.
- Designed ROS nodes to preprocess sensor data and publish structured state representations.
- Connected real-time robot observations to an LLM for high-level reasoning and context-aware decision-making.

Senior Capstone: Robotic Assembly & Inspection
- Designed an automated PCBA assembly and inspection workstation integrating computer vision, robotics, and control software.
- Built a complete system spanning sensing, actuation, and software orchestration, validated through iterative testing.

Activities & Honors

Dean's List (every semester)
Raymond M. Wright FastTrack Scholarship (2025–2026)
URI Wrestling Team
Accelerated B.S./M.S. Program Admit