Marcello Novak

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EDUCATION:

Embry-Riddle Aeronautical University, Prescott AZ — May 2026
BS Computer Engineering, Mathematics Minor — **GPA: 3.6/4.0**

PASSION:

I want to build things, tackle hard problems that break my brain, and learn whatever it takes to make them work.

TECHNICAL SKILLS:

Languages: C, C++, Python, Rust, MATLAB, SQL, VHDL, ORCAD, CSS, HTML
Technologies: Linux, Docker, UDP/TCP Networking, Embedded Systems, Multi-threading, Simulink, Realtime Operating Systems (RTOS), Git, VSC, ESXi Hypervisor, Virtualization, Adobe, Office
AI/ML: Large Language Models, Model Optimization, Quantization, Edge AI, PyTorch, Tensor, Pandas

PROFESSIONAL EXPERIENCE:

Nasa Jet Propulsion Laboratory | Embry Riddle Capstone Project — Prescott, AZ
Systems Architect – Autonomous AI Space Analysis Systems — August 2025 – Present

- Architected LLM deployment system for Qualcomm Snapdragon processors to operate autonomously in space environments, enabling offline image analysis and decision-making for deep space missions.
- Led system-level design for flight-ready AI system under extreme constraints: 6GB RAM limit, offline operations, radiation tolerance, and zero internet connectivity.
- Implemented model optimizations including 4-bit/8-bit quantization and pruning to compress models while maintaining accuracy for autonomous analysis operations.
- Designed JSON-based I/O architecture for seamless integration with existing JPL systems.
- Collaborated with JPL engineers for systems design and testing protocol development.

Honeywell Aerospace — Phoenix, AZ
ANTHEM Software Engineering Intern — May – August 2025

- Designed and deployed high-performance UI testing tool for aircraft communication systems, replacing legacy serial-based workflows with UDP protocol, improving data throughput and responsiveness.
- Built real-time command-and-control flows for networked software and embedded hardware.
- Contributed to multi-threaded design for data handling, command routing, and hardware interfaces.
- Collaborated with engineers to ensure seamless lab integration, deployment, and testing.
- Improved testing efficiency, reducing bench time for engineers during simulation and validation.

Capula Investment Management LLC — London, UK
Financial Software Engineering Intern — May – July 2023, 2024

- Developed and optimized risk analysis tools for bonds trading teams in python using libraries such as pandas and NumPy, with a focus on vectorized operations for optimized performance.
- Redesigned in-house API data pipelines to streamline decision-making workflows.
- Configured and trained a custom GPT-4 AI model for Bloomberg chat analysis and summarizing.
- Achieved companywide improvements in decision efficiency and productivity.

Embry-Riddle Undergraduate Research Institute — Prescott, AZ
EAGER Data Research Assistant — March – July 2022

- Managed and led a student team developing data for 3 years of meteorological data
- Engineered a custom data processing pipeline, applying vectorization, iterators, and parallel processing to further increase processing efficiency to meet time deadlines.
- Contributed to published research paper focused on damage control predictions for monsoon season.

PROJECT EXPERIENCE:

- Configured an ESXi hypervisor environment hosting multiple VMs, NAS storage, and self-hosted applications, including discord bots and media servers; managed network and system administration.
- Engineered a secure mTLS test network using Docker and the Certifier Framework to validate attestation and encrypted handshakes for confidential computing environments.
- Fabricated dual flamethrowers, controlled by Arduinos utilizing C++, circuit design, and 3D printing.