RICHARD LOURETTE

Principal Embedded Software Engineer

✉ rlourette@gmail.com | 1.585.953.5309 | Rochester/Oswego, New York
Available for Remote Work

PROFESSIONAL SUMMARY

Principal Embedded Software Engineer with 30+ years of experience architecting, developing, and optimizing embedded software solutions for mission-critical systems. Expert in C/C++ development, embedded Linux, RTOS, and bare-metal programming with proven leadership in technical architecture and team mentorship. Demonstrated success delivering scalable embedded systems for aerospace, defense, automotive, and IoT applications with emphasis on performance optimization and safety-critical requirements.

Core Competencies: Embedded Systems Architecture | C/C++ Development | Real-Time Systems | Embedded Linux | RTOS Implementation | Hardware-Software Integration | Performance Optimization | Technical Leadership

TECHNICAL EXPERTISE

Programming Languages: C/C++ (30+ years), Python, Assembly Language, Shell Scripting
Embedded Platforms: ARM Cortex-A/M/R, TI ARM A9, DSP processors, 8-bit/16-bit/32-bit microcontrollers
Operating Systems: Embedded Linux, RTEMs RTOS, FreeRTOS, Nucleus/Nucleus++ RTOS, Bare Metal Programming
Development Tools: GCC Toolchain, GDB, JTAG Debuggers, Git, CI/CD Pipelines, Jenkins, Docker
Performance Tools: perf, Valgrind, Flame Graphs, Memory Profilers, Static Analysis Tools
Communication Protocols: SpaceWire, I2C, SPI, UART, CAN Bus, Ethernet, TCP/UDP, RESTful APIs
Testing Frameworks: Google Test, Unity, Pytest, Hardware-in-the-Loop Testing, Automated Testing
Hardware Integration: FPGA, PCB Design Collaboration, Signal Processing, Sensor Integration
Methodologies: Agile Development, TDD, Code Review, Requirements Analysis, System Architecture Design

PROFESSIONAL EXPERIENCE

RL TECH SOLUTIONS LLC | President & Chief Technology Officer

October 2022 – Present | Rochester, NY

Topcon Positioning Systems – Senior Embedded Software Consultant
October 2023 – April 2025

- Architected and developed critical Linux C++ subsystems for next-generation GNSS receivers using embedded ARM A9 TI processors
- Implemented high-performance multi-threaded applications optimized for battery-powered, resource-constrained embedded devices
- Delivered 150,000+ lines of production C++ code with comprehensive test coverage using Python, pytest, and Google Test frameworks
- Implemented advanced white box testing strategies with systematic source code analysis for comprehensive test plan generation
- Achieved 40% performance improvement through CPU profiling using perf and flame graph analysis
- Developed custom loopback filesystem and Python curses monitoring applications for real-time thread CPU utilization debugging
- Established Git-based version control workflows and CI/CD pipelines following industry best practices

D3/L3Harris Aerospace – Chief Engineer Consultant
October 2022 – December 2023

- Designed complex spacecraft payload systems integrating 5 radiation-hardened MCUs via SpaceWire communication
- Architected embedded software solutions based on NASA Core Flight System (cFS) framework running on RTEMs RTOS
- Implemented microservices architecture with service-oriented design principles for enhanced reliability and maintainability
- Led technical design reviews and provided mentorship on embedded systems best practices and space-qualified software development

PANASONIC INDUSTRIAL IOT DIVISION | Engineering Group Manager

February 2021 – October 2022 | Rochester, NY

- Managed cross-functional engineering teams spanning RF Engineering, protocol design, antenna development, mesh networking, and embedded firmware
- Directed development of industrial IoT devices with integrated RESTful interfaces for enterprise system integration
- Resolved critical RF communication protocol issues for 2000+ device customer deployment during COVID-19 constraints
- Transformed testing processes from manual to fully automated, reducing test cycle time from weeks to 3 days
- Led technology roadmap development for next-generation industrial IoT product portfolio

TOKENIZE INC. | Vice President of Engineering

2015 – 2021 | Rochester, NY

- Spearheaded R&D for biometric wearable devices incorporating NFC technology and capacitive fingerprint scanning
- Designed ultra-low-power embedded electronics meeting strict battery life requirements for wearable applications
- Developed real-time signal processing algorithms and visualization tools for capacitive sensing systems
- Collaborated with hardware teams on power optimization strategies for resource-constrained wearable devices

L3HARRIS GEOSPATIAL SYSTEMS | Chief Scientist/Principal Investigator

2002 – 2015 | Rochester, NY

- Developed advanced in-situ telescope wavefront correction algorithms using Python for space-based optical systems
- Served as lead architect for GPS-III satellite program test equipment, defining system requirements and FPGA-based hardware architecture
- Designed onboard payload processing electronics for Wide Area Airborne Surveillance (WAAS) systems
- Led development of 7-slot high-altitude VPX supercomputing cluster for Advanced Geospatial Processing applications
- Architected electronic payload systems for visual and infrared sensor platforms

EASTMAN KODAK COMPANY | Chief Firmware Architect

1995 – 2002 | Rochester, NY

- Led international firmware development teams for hybrid consumer digital camera products
- Integrated emerging sensor technologies and wireless capabilities (Bluetooth) into embedded camera systems
- Designed application frameworks and device drivers for memory-constrained embedded systems
- Co-architected USB device drivers and PIMA 15740 application layer protocol implementation
- Developed real-time image processing algorithms for laser printer marking systems
- Created calibration algorithms for non-linear laser marking engine components

KEY ACHIEVEMENTS

- **Patent Portfolio:** 20+ issued US patents plus international patents in embedded systems and signal processing
- **Performance Optimization:** Achieved 40% performance improvements through systematic profiling and optimization
- **Team Leadership:** Successfully managed and mentored 13+ engineers across multiple disciplines
- **Process Improvement:** Reduced testing cycles from weeks to days through automation implementation
- **Mission-Critical Systems:** Delivered safety-critical embedded software for aerospace and defense applications
- **Technology Innovation:** Led adoption of emerging technologies in embedded systems across multiple industries

EDUCATION

Bachelor of Science in Electrical Engineering
University of Dayton | Dayton, Ohio

SECURITY CLEARANCES

- Previously held DoD Top Secret Clearance
- Completed Single Scope Background Investigation (SSBI) for Sensitive Compartmented Information (SCI) access
- Available for security clearance reinstatement

ADDITIONAL QUALIFICATIONS

- **Remote Work Experience:** 5+ years of successful remote collaboration and team leadership
- **Consulting Expertise:** Proven track record as technical consultant for Fortune 500 companies
- **Industry Recognition:** Subject matter expert in embedded systems with 30+ years of deep technical expertise
- **Continuous Learning:** Active in embedded systems community and emerging technology adoption