Perry's Résumé - OT/IoT Security

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R&D software engineer with 30+ years securing industrial control systems and critical infrastructure. Deep expertise in SCADA/ICS architecture, OT/IoT security, industrial protocol analysis, cryptographic communications, and embedded systems.

Proven track record deploying mission-critical systems protecting $100B+ infrastructure with exceptional reliability (<1 defect/10KLOC). (PDF, Text)

TECHNICAL SKILLS

OT/ICS Security	SCADA, PLCs, HMIs, RTU firmware development, industrial protocol security, OT network segmentation
Industrial Protocols	EtherNet/IP, Modbus/TCP, proprietary SCADA protocols, Reed-Solomon FEC, multi-route fault-tolerant communications
Security & Crypto	PKI, cryptographic protocol design, Shamir secret sharing, secure communications, vulnerability assessment
Monitoring & SIEM	Real-time telemetry, SDR signal processing, passive monitoring, log integration, AI/ML pattern analysis
Languages	C++ (25+ yrs), Python (15+ yrs), Rust (5+ yrs), C, Go, SIMD
Embedded Systems	RTOS, microcontrollers, solid-state RTU design, assembly optimization, ruggedized field deployments
DevOps & Infra	Linux, Docker, CI/CD, satellite communications, oilfield monitoring systems

RELEVANT EXPERIENCE

R&D CONSULTANT — *Dominion R&D Corp.* (Remote, 2009–Present, FT)

Consulting and R&D for Industrial Control, Communications Security, and IoT.

- Created cpppo Python library for industrial EtherNet/IP and Modbus protocol parsing – widely used for PLC communication and protocol analysis
- Delivered ruggedized satellite-connected OT monitoring, communications, and video systems across Alberta oilfields, running unattended for years

- Developed ezpwd-reed-solomon high-throughput C++/JS Reed-Solomon FEC library, used by aerospace and defense systems globally for secure data transmission
- Architected IoT systems for energy clients with fault-tolerant communications
- Guide development teams through cryptographic and industrial systems architecture and implementation

Distributed Systems R&D - *Holo Ltd.* (Remote, 2018–2020, FT)

Architected & tested prototypes of HoloFuel's novel transaction engine.

- Tested capability to process simultaneous atomic transactions even in network partitions.
- Contributed to R&D for Holochain's novel distributed blockchain technology.

Software Engineer - *clearGRID Ltd.* (Remote, 2017-2018, FT)

Implemented distributed IoT telemetry system for utility meter reading.

- Built real-time SDR-based telemetry system processing 25Msps I/Q signals using commodity hardware – directly applicable to OT monitoring
- Optimized AVX/NEON vector processing for multi-channel RF demodulation
- Achieved consensus on meter readings across lossy RF channels without requiring global coordination – fault-tolerant distributed architecture

Sr. IT Advisor - *Enbridge Pipelines* (Edmonton, 2002–2009, FT)

Reduced risk profile of hydrocarbon pipeline control systems by deploying custom cryptographically secure multi-route SCADA communications protocol.

- Architected Reed-Solomon erasure-coded multi-route protocol for real-time SCADA, enabling continued operation through communications degradation/failure
- Developed solid-state RTU firmware for 24/7 pipeline control with exceptional quality: <1 defect per 10,000 lines of code
- Deployed hundreds of ruggedized RTU units across critical infrastructure sites – systems remain operational today
- Implemented multi-path routing maintaining cryptographic integrity across potentially hostile network environments
- Secured communications for $100B+ critical energy infrastructure

Software Developer - *Hewlett-Packard* (Calgary, 1989–1996, FT)

Pioneered state machine architecture for distributed industrial control systems.

- Re-engineered RTAP's core SCADA alarm system with DFA state machines for distributed safety-critical workflows
- Enabled end-users to configure complex, geographically distributed alarm correlation and response workflows
- System deployed continent-wide in pipeline SCADA environments – still operational after 30+ years of continuous deployment

OPEN SOURCE & PUBLICATIONS

- cpppo - Industrial EtherNet/IP and Modbus protocol implementation (Python)
- ezpwd-reed-solomom - High-performance Reed-Solomon FEC (C++)
- Authored technical articles on industrial communications, consensus algorithms, distributed systems security, and cryptocurrency/monetary system architecture.

EDUCATION

B.Sc. Computer Science - ***University of Calgary*** **(Calgary, 1984-1989)**