Perry's Résumé

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Inventive and pragmatic R&D engineer with 30+ years of experience architecting high-performance, secure software/hardware systems across fintech, energy, and communications. Deep expertise in C++, Rust, Python, distributed systems, cryptography, and embedded design. Trusted to lead complex, mission-critical initiatives, prototype future-facing systems, and mentor engineering teams. (PDF, Text)

Technical Skills

- **Languages**: C++ (20+yrs), Python (10+yrs), Rust (5+yrs), C, Go, SIMD, ...
- **Embedded Systems**: RTOS, microcontrollers, assembly optimization, PCB debug
- **Distributed Systems**: Holochain, Ethereum EVM, CAP/BFT systems, scalable dApps
- **Protocols & Automation**: EtherNet/IP, Modbus, SCADA, Reed–Solomon FEC, Fountain codes
- **Security & Cryptography**: SLIP-39, Shamir secret sharing, secure comms
- **Performance**: SIMD (Intel AVX, ARM NEON), SDR, real-time signal processing, multithreading
- **DevOps & Infra**: Linux, Docker, CI/CD pipelines, inherently secure and fail-safe auth systems

Experience

R&D Consultant - *Dominion R&D Corp.* (Remote, 2009–Present)

Deployed remote monitoring, communications and automation for critical systems that have run unattended for years at a time.

- Architected blockchain and IoT systems for energy and fintech clients.
- Created `cpppo` Python library for industrial EtherNet/IP protocol parsing.
- Delivered rugged satellite-connected monitoring, comms and video systems across Alberta oilfields.
- Mitigated critical security flaw in a major enterprise collaboration suite, deployed globally.
- Developed `python-slip39` cross-platform SLIP-39 App for secure BIP-39 seed backup and recovery.
- Developed `ezpwd-reed-solomon` high-throughput C++/JS implementations of Reed–Solomon FEC.
- Guide dev teams through cryptographic and distributed systems architecture and implementation.
- Many commits to diverse open-source projects in a variety of fields and languages.
- Actively share research code and papers (e.g. holofuel-model, many other private repos)
- Authored technical articles on Holochain, consensus, and industrial comms.

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

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.* (Kelowna, BC 2017–2022)

Successfully implemented a replacement for expensive, custom radio telemetry systems using inexpensive off-the-shelf computer hardware and SDR modules.

- Built real-time SDR based system for meter reading using commodity CPUs.
- Optimized thruput with AVX/NEON for 25Msps I/Q multi-channel signal processing.

System Architect - *Enbridge Pipelines* (Edmonton, AB 2002–2009)

Reduced the risk profile of hydrocarbon pipeline control system by deploying a state-of-the-art cryptographically secure multi-route communications prototol, still in operation today.

- Built fault-tolerant Reed-Solomon encoded multi-route protocol for real-time SCADA.
- Developed solid-state RTUs for 24/7 control; maintained <1 defect per 10K LOC.
- Deployed hundreds of ruggedized units across critical infrastructure sites.

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

Pioneered a radical re-architecture of a core SCADA automation alarm system component.

- Re-engineered RTAP's core alarm system with DFA sstate machines.
- Enabled end-users to configure complex, distributed safety-critical workflows.
- Currently deployed in pipeline SCADA systems continent-wide.

Education

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

Let's Innovate Together

I'm excited about the possibility of bringing my unique blend of experience and innovative problem-solving to your enterprise. Whether you're looking to enhance your information security posture, scale your infrastructure, or explore cutting-edge technologies, I'm ready to contribute.

Let's schedule a conversation to discuss how my expertise can address your specific challenges and drive your enterprise forward. I look forward to the opportunity to collaborate and innovate together.

Best regards,

Perry Kundert