

Perry's Résumé - Licensing

Perry Kundert <perry@kundert.ca> +1-780-970-8148

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Inventive R&D engineer with 30+ years architecting secure, high-performance software systems across enterprise, fintech, and industrial domains. Creator of the Python `crypto-licensing` module implementing Ed25519-signed license verification, and `python-slip39` implementing cryptocurrency payment integration and secret handling, demonstrating hands-on cryptographic licensing expertise. Deep commercial experience in C++ (25+ yrs), Python (15+ yrs), REST APIs, client-server architectures, and distributed systems. Proven track record delivering mission-critical solutions, secure cryptography implementations, and enterprise-scale systems. Canadian citizen, available immediately, ready to relocate. (PDF, Text)

Core Competencies

Languages & Frameworks

- C++ (25+yrs commercial): enterprise-scale systems w/ <1 defect per 10K LOC in production.
- Python (15+yrs): `crypto-licensing` (in test), `python-slip39`, and `cppo` modules in wide use.
- Rust (5+yrs): Holochain distributed system R&D and HoloFuel cryptocurrency prototypes.
- Embedded systems development: RTOS, SIMD, assembly optimization, PCB debugging.

Licensing Technologies & Cryptography

- Creator of `crypto-licensing` Python module: Ed25519-signed license verification with DNS-based public key distribution (DKIM model), offline license validation, cryptocurrency payment integration.
- Deep cryptographic licensing experience: Public-key infrastructure (PKI), Ed25519 signatures, license server architectures, node-locked and floating license models.
- Security expertise: SLIP-39 Shamir secret sharing, secure communications, PQC, fail-safe auth.
- Reed-Solomon error and erasure recovery C++ module `ezpwd-reed-solomon` used worldwide by aerospace and military contractors.
- FlexNet-style licensing: Node-locked, floating, and license server architectures through hands-on implementation.

Enterprise Architecture & APIs

- Service-Oriented Architecture (SOA): SOAP/REST APIs, microservices design patterns.
- Client-server architectures: Multi-tier systems, distributed authentication, session management.
- Decentralized/Distributed systems: CAP/FLP designs, BFT resilience, DHTs consistency.
- Web/cloud-based technologies: RESTful services, cloud deployment, scalable web applications.

- Network protocols: EtherNet/IP, Modbus, SCADA, TCP/IP stack, DNS, HTTP/HTTPS, QUIC, mTLS1.3, WebSockets/WebTransport.
- Authentication Standards: Have implemented WebAuthn, FIDO2 systems in various languages.

Development Best Practices

- Large-scale commercial software development: CI/CD pipelines, code reviews, mentoring
- Quality focus: <1 defect per 10K LOC maintained in mission-critical RTU firmware
- Performance optimization: SIMD (AVX/NEON), lock-free wait-free multithreading, real-time SDR and signal processing.
- DevOps: Linux, Docker, automated testing, version control (Git), deterministic build/deploy (Nix).
- Tools: Git, Docker, GDB, Valgrind, Linux Perf, Static and dynamic analysis

Professional Experience

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

Architected and delivered cryptographic licensing, blockchain, and enterprise software systems.

Licensing & Cryptography Leadership

- Designed and implemented `crypto-licensing` Python module with Ed25519 cryptographic signatures
 - Secure license verification via DNS TXT records (DKIM-style public key distribution)
 - Offline license validation with signed verification caching
 - Cryptocurrency payment integration (Ethereum Virtual Machine smart contract) for automated license issuance
 - RESTful API for license server operations
 - Production deployment supporting commercial software licensing
- Developed `python-slip39`: Cross-platform SLIP-39 App for secure BIP-39 seed backup/recovery
 - Advanced cryptographic key management and Shamir secret sharing implementation
 - Multi-platform GUI and CLI tools (Windows, macOS, Linux, iOS, Android)

Enterprise Software Development

- Created `cpppo`: Industrial EtherNet/IP CIP protocol parser in Python
 - Commercial deployment in industrial automation systems globally
 - Client-server architecture with TCP session management
 - Protocol reverse-engineering and standards implementation
- Developed `ezpwd-reed-solomon`: High-throughput Reed-Solomon FEC in C++/JavaScript
 - Used by aerospace and defense contractors worldwide
- Mitigated critical security vulnerabilities in major enterprise collaboration suite (global deployment)
- Guide development teams through cryptographic system architecture and secure implementation

- Active contributor to diverse open-source projects across multiple languages

Technical Consulting

- Architected blockchain and IoT systems for energy and fintech clients
- Deployed rugged satellite-connected monitoring and communications systems across Alberta oilfields
- Authored technical articles on distributed systems, cryptography, and industrial communications

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

Architected and tested novel distributed transaction engine prototypes.

- Designed partition-tolerant mutual credit system with cryptographic finality
- Implemented agent-centric accounting enabling linear $O(n)$ scaling vs $O(n^2)$ blockchain bottlenecks
- Validated simultaneous atomic transactions during network partitions
- Contributed to R&D for HoloChain's distributed application framework

Software Engineer - *clearGRID Ltd.* (Kelowna, BC 2017–2022)

Replaced expensive custom radio telemetry with commodity hardware and SDR technology.

- Built real-time SDR system for utility meter reading using off-the-shelf CPUs.
- Optimized throughput with AVX/NEON SIMD for 25Msps I/Q multi-channel signal processing.
- Implemented fault-tolerant distributed consensus for partial data collected from multiple samples across lossy RF channels.

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

Deployed cryptographically secure SCADA communications for critical hydrocarbon pipeline infrastructure.

- Architected fault-tolerant Reed-Solomon encoded multi-route protocol for real-time SCADA
 - Cryptographic integrity across hostile networks
 - Multi-path routing maintaining security during communications failures
 - Still in production operation today across continent-wide infrastructure
- Developed solid-state RTUs for 24/7 pipeline control
 - Maintained <1 defect per 10,000 lines of code in production
 - Controlled \$100B+ critical infrastructure
- Deployed hundreds of ruggedized embedded units across remote sites

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

Re-architected core SCADA automation alarm system component.

- Pioneered DFA state machine-based alarm correlation system for distributed SCADA
- Enabled end-users to configure complex, safety-critical workflows
- System deployed continent-wide in pipeline SCADA systems (30+ years continuous operation)

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