Perry's Résumé - Industrial Automation & SCADA

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Abstract

Industrial automation and SCADA engineer with deep experience, based in the Edmonton area. Built Ignition SCADA CI/CD and testing infrastructure that validates Ignition Python scripts against CPython 2.7, Jython and Ignition's own Jython offline – over a runtime simulation complete enough that deployed scripts run unmodified – with Git-managed deployments. Author of `cpppo`, the Python EtherNet/IP and CIP library; RTU firmware and encrypted communications developer for Enbridge (hundreds of ruggedized units, fewer than 1 defect per 10K lines, measured in the field). Startup, commissioning and loop tuning across pipelines, oilfields and industrial plants; mentoring junior automation developers in modern testing and deployment discipline. (PDF, Text)

Skills

- **SCADA & testing infrastructure:** Ignition deployment and CI/CD; pre-deployment testing of Ignition Python scripts against CPython 2.7, Jython and Ignition Jython over an offline runtime simulation – deployed scripts run unmodified and unaware; Git-managed deployments; dev/staging/production environments with automated regression testing.
- **PLC & controllers:** EtherNet/IP and CIP (author of the `cpppo` library), Modbus RTU/TCP, DNP3, RS-485/RS-422 serial; Rockwell ControlLogix/CompactLogix and PowerFlex drives; solid-state RTU firmware; data diodes and unidirectional gateways.
- **Simulation & validation:** `datasim`, a large-scale PLC simulation environment (hundreds of concurrent PLCs) with field-data replay and latency, loss and bandwidth injection; recorded-signal regression harnesses; deterministic multi-year simulation of control systems.
- **Field, commissioning & tuning:** startup and commissioning of remote and industrial systems; PID loop design and tuning in C++, Python and Solidity (anti-windup, bumpless start and retune, setpoint-shift-corrected derivative, fixed-point); 10+ years operating closed-loop field systems.
- **Software & delivery:** Python (15+ yrs), C++ (25+ yrs), C, Rust (5+ yrs); Linux, Docker, CI/CD, Git, Nix reproducible builds.
- **Team & training:** mentoring and code review; bringing junior SCADA and automation developers into modern R&D and testing protocols; written decision records and application notes.

Experience

IT/OT Solutions Engineer - *Vantage Engineering* (Spruce Grove, AB 2026–present)

Designing the boundary between field equipment and the systems that use its data, for electrical automation.

- Built Ignition SCADA CI/CD and testing infrastructure: pre-deployment testing of Ignition Python scripts against CPython 2.7, Jython and Ignition's own Jython, over an Ignition runtime simulation complete enough that deployed scripts run unmodified and unaware – developers don't need to know the code is executing under test. Git-managed deployments with dev/staging/production environments; script changes are validated before production, not in it.
- Developed a secure DNP3 data diode supplying real-time field data to IT systems while leaving OT field equipment unreachable from the IT side, at a fraction of commercial diode cost without relaxing the unidirectional guarantee.
- Working with the teams delivering electrical automation on large projects, on the OT side of that boundary.

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

Integration, telemetry and control systems for energy and industrial clients; remote systems that run unattended for years.

- Created `cpppo`, the Python EtherNet/IP and CIP library used worldwide as the integration layer between analytics and the PLCs on the plant floor (ControlLogix, CompactLogix, PowerFlex), documented with worked customer-integration examples.
- Built `datasim`, a large-scale PLC simulation environment – hundreds of concurrent simulated PLCs – that records and replays real field data and injects latency, loss and bandwidth limits, so a SCADA vendor's polling behaviour was measured against degraded WAN and satellite routes before production cutover.
- Designed and validated PID control systems end to end: `ezpwd::pid` in C++ (fixed-point, anti-windup, bumpless start and retune), the same design in Python, and on-chain in Solidity; deployed in aerial data-collection systems.
- Delivered ruggedized satellite-connected monitoring, communications and video systems across Alberta oilfields; field-serviceable and diagnosable from hundreds of kilometres away.
- Deployed and operate a fleet of hundreds of remotely monitored Starlink-connected routers across remote sites: indoor/outdoor WiFi, camera monitoring, and on-site PCs running AI image analysis (Blue Iris) that triggers event reporting and annotates video segments.
- Designed, fabbed and bench-tested a prototype 1-Wire sensor board for intrinsically safe grain-bin monitoring; the pilot did not proceed.
- Provide engineering support directly to clients: discovery and scoping, design reviews, test planning, written decision records and application notes.

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

- Built an end-to-end real-time receiver that polyphase-filterbank-channelized a 25 Msps I/Q stream into 200 kHz channels — 125 in the full band, 65 in the production band — decoding SCM reports on 64 concurrent 900 MHz ISM-band channels, sustained, with no dropped samples; integration with flight-approved hardware, power and communications.
- Built a recorded-signal regression harness so algorithm changes were measured against captured field data rather than synthetic benchmarks.

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

Custom RTUs and communications for hydrocarbon pipeline control; the protocol is still in operation.

- Developed solid-state RTU firmware for continuous 24/7 control in remote locations, sustaining fewer than 1 defect per 10,000 lines of code, measured in the field, not the lab.
- Deployed hundreds of ruggedized units across critical infrastructure sites.
- Architected LiveWIRE, a cryptographically secure, Reed-Solomon encoded, multi-route protocol for real-time SCADA telemetry over marginal and intermittent links.

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

- Re-engineered the core alarm engine of the RTAP SCADA platform around DFA state machines; still deployed in pipeline SCADA systems continent-wide, 30+ years on.

Open Source

- cpppo - Industrial EtherNet/IP, CIP and Modbus protocol implementation (Python)
- ezpwd-reed-solomon - Reed-Solomon and BCH FEC, used by aerospace and defence developers (C++/JS/Python)
- ikona-style - derived gear tooth forms and balanced servo layouts for high-ratio reducers (JS)

Education

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