

About - Robert Ellen

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I am a full stack software developer with experience in generalist software development with a focus on soft real-time systems software and analytics in telecommunications and industrial control systems. I'm passionate about system reliability and performance, and employ techniques such as functional programming, type-safety, automated testing, and observability to improve software quality. I like bad puns and loud shirts.

Skills

Technology

- **Back-End / Systems:** Elixir, Erlang, Java, Node.JS, Haskell
- **Front-End:** Javascript, CSS, HTML, TailwindCSS
- **Frameworks/Libraries:** Phoenix (incl. LiveView), React, JSP
- **Databases:** Postgres, MySQL, SQLite, Kafka
- **APIs:** ReST/JSON, gRPC, GraphQL
- **Architecture:** CQRS/ES, PubSub, CRUD, Microliths, Microservices, Stranglers
- **Cloud:** AWS, Gigalixir, Linode, Netlify
- **Observability:** InfluxDB, Grafana, Syslog, Prometheus
- **OS:** MacOS, NixOS, Ubuntu, Windows (incl. WSL), Docker
- **Tools:** Git, GitHub, Jira, Bitbucket, Bamboo (Atlassian)
- **Misc:** Spacemacs, vim, emacs, tmux, LaTeX

Work Experience

Senior Developer

Alembic, September 2020 → Present

- Phoenix LiveView and CQRS/ES application development
- Elixir cluster deployment including distributed Mnesia data store
- Observability
- React/GraphQL/Phoenix/Postgres web applications

Senior Software Engineer

Telstra T-Live Network Performance Monitoring Platform

Telstra, November 2018 → September 2020

- took an Elixir-based gRPC NMS telemetry collector from prototype to production, processing telemetry from 100s of devices at the edge of Telstra's networks (NBN and enterprise) on a single node, ~10 telemetry messages per device per second into ~40 metric values per device per second
- co-developed a custom functional DSL (Domain-Specific Language) for telemetry message processing
 - dynamically-typed total language with immutable data types, closures, and strict evaluation
 - lexer and parser written using Erlang's leex and yecc
 - tree-walking interpreter with property-tested BIFs, hot-code-loading runtime

- used by network engineers to transform telemetry data from the gRPC edge devices above into useful metrics, aligning with Telstra's push to develop self-service solutions
- co-led the development of a new meta-data service using Elixir and Postgres resulting in 2-3 orders of magnitude speed-up for queries from client systems; was an enabler for T-Live to increase its scalability of monitored devices by at least 400%
- designed an Elixir rewrite of an NMS metric aggregation service capable of processing in excess of 50k metrics per second on a handful of CPU cores, and mentored a junior engineer who implemented and deployed the service
- helped the team enhance its visualisation skills by mentoring engineers in combining Influx and MySQL timeseries- and meta-data in the development of Grafana dashboards

Plant Information Management Systems Developer

Yatala Brewery Process Control and Automation Engineering

Carlton&United Breweries (CUB) September 2004 → October 2018

- development of key site information systems for production tracking and utilities & energy KPI reporting, including timeseries data logging and analytics pipeline in excess of 10 million raw points per day
- moved to more reliable and lower cost software development by introducing functional programming technology, including Haskell, own-built functional libraries in G2, and functional Javascript
 - Haskell used for offline data processing tasks (binary timeseries files and XML files) that automated cumbersome manual processes
 - Developed a functional library for G2 that provides higher-order functions for list traversals
- introduced several innovations to the software ecosystem including automated software data point configuration (leading to a reduction in manual configuration effort by 99%), advanced database design, data analysis and visualisation (SVG, D3.js, Grafana, and R) and web HTTP APIs
- co-authored several academic conference/journal papers on the information systems, energy management and control system activities at the brewery
- mentor to over 20 vacation work experience engineers, CEED students and graduate engineers in the physical engineering disciplines
- established strong collaborative relationships with engineers, technicians, technical brewers and managers
- recognised with a company-wide excellence award for engineering change management

Talks

Check out my talks page for recordings of various presentations.

Education

Bachelor of Engineering (Electronics) and Bachelor of Information Technology (Software Engineering)

Queensland University of Technology (QUT), Brisbane, 1999 → 2003

Contact

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