Lía Connor

@ lia@kivikakk.ee   🔗 kivikakk.ee   kivikakk   in Lía Connor

Systems engineer. Highly experienced generalist working across web, application and systems technologies. Security- and performance-minded.

Experience

Independent Penetration Tester

Multiple clients

📅 2020 — today   📍 Melbourne, Australia (remote)

- Conducted whitebox/greybox/blackbox testing of web applications written in a wide variety of frameworks.
- Provided fast, comprehensive, actionable feedback to improve security posture.

Software Engineer

Radiopaedia

📅 2020 — 2023, 2024 — today   📍 Melbourne, Australia (remote)

- Maintained and improved a high-traffic Rails application on a 10+ year old code base used by medical industry professionals from every country on earth.
- Managed process and workflow for the team while improving our QA processes to better facilitate onboarding of new engineers.

Senior Systems Engineer

GitHub (Microsoft)

📅 2016 — 2019   📍 San Francisco, USA (remote)

- Led the effort to convert all user content on the site from an ad-hoc organic Markdown implementation to a standards-based one.
  - ‣ Migrated more than half a billion items of user content — every single issue, pull request, and comment — safely without downtime, data loss, or user workflow disruption.
- Led work on our next-generation code search engine, anonymous request caching tier, backup systems, Git storage systems, and novel datastore experiments.
- Maintained several core codebases in C, achieving performance in security-critical systems.
- Collaborated with Microsoft on porting the VFS for Git client to Linux, including writing the FUSE-based filesystem driver and refactoring the .NET core.
- Maintained and evolved our proprietary source code highlighting system, migrating it from an in-process library to a microservice handling millions of requests per hour.
- Regularly deployed github.com and acted as first responder for complex issues.
- Worked remotely in teams spanning EMEA, APAC and the Americas.
- Founding member of advisory council regarding inclusion and diversity.

Tech Lead

Alliance Software

📅 2014 — 2016   📍 Melbourne, Australia

- Led efforts to complete and deploy an SMS gateway frontend within a client's infrastructure (Django, Angular, AWS), and led technical communication with a partner company implementing payment systems.
- Performed pre-acquisition due diligence penetration testing for a client.
- Responsible for and managed technical quality for a number of projects, mostly Django, PHP/WordPress, in-house CMS, and Symfony.

Development Lead

Draftable

📅 2012 — 2014   📍 Melbourne, Australia

- Led a team of five working on a technologically diverse codebase (Python, C# (SharePoint, Office extensions), F#, Node.js, Chrome extension).
- Produced a high-quality Microsoft Outlook extension using algorithms developed by academics in-house to cluster documents found in the inbox, inferring and creating a version history by textual and metadata analysis.

Software Engineer

Noble Samurai

📅 2008 — 2012   📍 Melbourne, Australia

- Led efforts to achieve reliable test suites and repair architecture of mission-critical systems.
- Application work was in Adobe AIR (HTML/JS/ActionScript), web in PHP and Rails, backend/systems in Erlang, Rails and Node.js.
- Co-led effort to decompose a monolithic Erlang application based on poorly-defined NoSQL store into several independent REST- and AMQP-based services, backed by a relational store.
- Maintained account and payment systems, and was primary contact for a long-running project involving co-ordination with several third-party API vendors.
- Architected and developed a proprietary HTTP proxy with several unique requirements; maintained extremely high performance and reliability in production.
- Introduced Git to the company and supported our migration from Subversion.

Skills

Highly experienced

C, C++, CommonMark, Git/jujutsu, Go, JavaScript, Linux, macOS, Nix, PostgreSQL, Python, React, Ruby, Rust, TypeScript, Zig

Experienced

ActivityPub, Amaranth, AMQP, AWS, Azure, C#, Chisel, Clojure, CSS, CUE, Docker, Elixir, Erlang, F#, flex/yacc, FluxCD, FreeBSD, Haskell, Java, Kubernetes, Lua, MySQL/MariaDB, Objective-C, OCaml, OpenBSD, Perl, PHP, Protobuf, Puppet, Redis, Scala, SQLite, Swift, Verilog, Windows, x86/Arm/RISC-V assembly

Special interest

Compilers, parsers, virtualisation, low-level systems, FPGAs, Unicode, i18n/l17n, secure design practices, reverse-engineering, build systems (especially reproducible), programming language theory and design

Works

Escapology: how, when and why to encode and escape

📅 18 April 2012

A primer on what it means to encode or escape data.

Snapchat: not for state secrets

📅 10 May 2013

A gentle introduction to conducting MitM attacks, reverse-engineering, and very basic cryptanalysis.

Breaking homegrown crypto

📅 20 February 2016

Analysis of a popular PHP's framework session storage mechanism, and cryptanalysis of the included fallback encryption mechanism, breaking it completely.

A formal spec for GitHub Flavored Markdown

📅 14 March 2017

GitHub Engineering writeup of formalising GitHub Flavored Markdown in terms of CommonMark, and the transition of all user content from the existing syntax to the new, standardised one.

Chisel and C++, together at last

📅 28 May 2024

A talk I gave at the Yosys User's Group about using Chisel with C++ for simulation and testing.

Git and jujutsu: in miniature

📅 9 November 2024

A side-by-side comparison of using Git and jujutsu to achieve the same result.

Open source

Project founder, lead and maintainer

Comrak

📅 2016 — present   Rust

100% CommonMark (plus GitHub extensions) compatible Markdown parser and renderer for Rust. Used by GitLab, crates.io and docs.rs for Markdown rendering. Reddit's new-style site uses a *Comrak* fork and its developers contribute back to the project. It is depended upon by tens of thousands of other downstreams, with a total end-user base estimable in the tens of millions.

Project lead

cmark-gfm

📅 2016 — 2019   C

Renders all Markdown content on GitHub.com. I forked the upstream CommonMark standard and its reference implementation, adding extensions for features used by GitHub users to make it a suitable replacement for our old ad-hoc Markdown implementation. I continued to maintain the library (and derived standard) by keeping parity with upstreams, responding to feature requests, and making bug and security fixes.

Contributor

many other projects

📅 2008 — present

Features, bug fixes, documentation commits, etc. in hundreds of other projects.