

Charles Strahan

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Objective

As a Principal Software Engineer with over 15 years of experience in the industry, I am seeking new challenges in a dynamic and innovative organization. I have a proven track record of delivering complex projects and expertise in software engineering and design. With strong leadership and technical skills, I aim to lead and mentor engineering teams while contributing to the development of high-quality software products, all while creating a positive and collaborative work environment that fosters growth and innovation. My goal is to leverage my expertise in software engineering and design to drive growth and success for the company.

Open Source Highlights

- NixOS** A Linux distribution featuring a purely functional package manager and completely declarative configuration management. I am heavily involved in package maintenance, expanding support for other platforms, and supporting the community.
- RubyGems.org** Added SHA-256 checksums to the RubyGems.org API. This was then utilized in my work to bring automated Nix packaging to the Ruby ecosystem, as well as increase the security for all users of RubyGems.
- tree-sitter-nix** I created this Nix-language parser which is now used by nearly everyone for code formatting, syntax highlighting, automatic indentation, folding, etc.
- probe-rs** For some Embedded Rust projects I'm working on, I wanted to use the probe-rs programmer/debugger; however, probe-rs's support for flashing/debugging ARM devices via CMSIS-DAP probes only worked with Serial Wire Debug (SWD) and not JTAG. I have a Pull Request open that adds support for using CMSIS-DAP probes with JTAG, adding the necessary JTAG state machine initialization and CMSIS-DAP commands (de)serialization.

Experience

2021–2023 **Principal Software Engineer, Data Science, BlueShift, San Francisco, CA (remote).**

I am a member of the Data Science team and I report directly to Manyam Mallela, the Chief AI Officer & Co-Founder.

As a Principal Software Engineer my insight and expertise are called upon to identify, communicate and execute new engineering initiatives, while acting as a liaison between teams as necessary. I take point on challenging engineering problems such as architectural design, feature implementation, and the scaling of our services (in terms of both throughput and stability) to meet our performance targets; whenever possible, I delegate and provide guidance to promote growth in the team. My knowledge and experience is shared through architecture reviews/postmortems, internal talks and written documentation.

I would be happy to expound upon my endeavours; of particular note, I made significant improvements to the interpreter (written in Rust) for our bespoke programming language (which is responsible for all of the product recommendations we generate for our customers' marketing campaigns).

Technologies: Rust, Elixir, Pulsar, Kafka, Ruby/Rails, AWS (ECS, ALB, S3)

2015–2021 **Senior Software Developer, Decipher Tech Studios, Alexandria, VA (remote).**

Leading design and implementation of core security and HTTP/gRPC proxy components within our service mesh:

Designed, documented and led team responsible for the roll-out of Zero Trust Networking infrastructure. We are implementing SPIFFE (Secure Production Identity Framework for Everyone), leveraging SPIRE within our Kubernetes/OpenShift clusters for X.509 key issuance/rotation. Lyft's Envoy L7 proxy is used for TLS termination in a sidecar configuration, using its SDS API to push certificates to each service's respective sidecar. All service-to-service communication is secured (in terms of both authentication and authorization) via mTLS. Intra-mesh communication is subject to RBAC policies based on the service's SPIFFE-ID.

Designed and implemented an extended version of the Envoy proxy, empowering our developers to write Envoy extensions (i.e. "filters") entirely in Go, whereas vanilla Envoy requires deep expertise in C++. Implemented with C++ and Go, using Google's Bazel as our build system. In the process, collaborated with Google engineers to resolve critical bugs in the Bazel build system that otherwise result in very subtle linking issues when combining Go, C++ and Protobufs in the same executable binary.

As a fully remote employee, I leverage teleconferencing, team chat and shared documents to communicate my designs/specifications and tasking. As employee #5, I've worn many hats, including mentoring of interns, making profound performance improvements to our Continuous Integration infrastructure, government contract work, and much more. I'd be more than happy to go into further detail if requested.

2014–2015 **Sabbatical.**

Leading OSS initiatives, learning Haskell, and slowly chipping away at a mountain of whitepapers.

2012–2014 **Software Developer**, *LivingSocial*, Washington, DC (remote).

Worked as part of a remote team to design and implement our email delivery platform (RESTful web services written in Clojure). Developed performance critical integrations with PowerMTA using Java. Provided training and direction to other teams, and travelled to Barcelona to lead the integration of a recent acquisition. Developed client libraries for Ruby/Rails and PHP.

2010–2011 **Lead Software Developer**, *Adventure Pilot*, McKinney, TX.

Design and development of the iFly 700 software - GPS moving map software for pilots (WinForms application on Compact Framework 3.5). Implementation of real time weather rendering via ADSB signal, autopilot control, pilot/elevation obstruction alerts, meteorological data parsing, etc.

2010–2010 **Developer**, *Atlantic Aviation*, Addison, TX.

Responsible for the implementation and design of our custom CRM software (written in C#, WPF for UI and WCF for SOAP web services). Full-stack development.

2008–2010 **Lead Software Developer**, *BWC Photo Imaging*, Dallas, TX.

Developed web services for order placement, reporting & administrative interfaces, and backend services to manipulate and fulfill print orders. Oversaw and mentored contractors. Established version control (Subversion) and Continuous Integration (TeamCity). Increased performance of legacy backend systems by aggressively refactoring toward a pure functional design, using parallel collections to achieve 20x throughput. Languages used: C#.

2007–2008 **Service Bureau Specialist I**, *GDSX*, Plano, TX.

Travel industry software development for reservation QC, finishing, traveler correspondence, and CRM. Developed tools for internal use within GDSX for travel data parsing, retrieval and storage between third party mainframes and in-house SQL Server databases. Languages used: C#.

Technical Experience

Proficient With

languages Rust, Embedded Rust, Go, Haskell, Java, C#, C, C++, Ruby, Clojure, JavaScript, SQL
technologies Envoy, Bazel, Kafka, AWS, NixOS, Linux, Redis, Git, Vim, Bash Scripting, Functional Programming

Have Experience With

languages Elixir, Python, F#, Scala, PHP
technologies Scylla/Cassandra, Pulsar, Chef, Elastic Search, Docker, L^AT_EX