

Sander Melnikov

Senior Software Engineer focused on functional programming, declarative infrastructure, and bringing products from idea to execution.

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Experience

Jan 2024 - Present	Senior Software Engineer Cachix In charge of product and infrastructure for Devenv and Cachix, including developer tooling, production infrastructure, deployments, and CI. - Developed the modern Rust build of Devenv, focusing on performance, maintainability, and cross-platform support. - Maintain and develop plug-and-play modules for Devenv covering 50+ language modules, 43 services, and 17 integrations. - Designed Cachix's release pipeline: declarative infrastructure, release-fenced migrations, rolling auto-scaling deployments, and customer AMIs. - Taught a hands-on Devenv workshop at NixCon 2024 in Berlin. - Discovered a memory-corruption vulnerability in Nix's archive parser with potential root code execution GHSA-vh5x-56v6-4368.
Sep 2022 - Dec 2023	Software Engineer Cachix Worked on Cachix's binary-cache service in Haskell, optimizing storage, uploads, and observability. - Cut cloud spending by 75%: migrated binary cache storage from S3 to Cloudflare R2 with zero downtime through dual reads, background migration, and upload cutover. - Rebuilt the upload pipeline to optimize scaling costs. - Released Cachix Deploy: a scalable service for pull-based deployments of Nix machines, with automatic rollbacks and observability. - Built the Cachix Daemon: a tool to stream and cache Nix builds concurrently. - Co-built Flakestry: a public open-source Nix flake registry. - Upstreamed Rosetta support for NixOS on Apple Silicon.
Jan 2019 - Aug 2022	Independent Software Engineer Transitioned to functional programming and declarative infrastructure, focusing on Haskell, Nix, and Elm. Worked on open-source projects.
Sep 2016 - May 2018	Lead Software Engineer Campusboard Led the company's pivot from a university marketplace to a UK student-accommodation reseller. Ruby on Rails, Ember.js, PostgreSQL, Redis, Elasticsearch, AWS, and Heroku.

Projects

2021	Flux flux.sandydoo.me An open-source fluid simulation inspired by the macOS Drift screensaver. 800+ stars on GitHub; 600+ paying customers. Rust, Elm, WebGPU, WebGL, WebAssembly, Nix
2020	Polar Clock polarclockelm.sandydoo.me A colourful animated clock in polar coordinates. Elm, SVG

Education

Oct 2015 - Sep 2016	Master of Science in Applied Statistics University of Oxford First class for dissertation. Evaluated the statistical performance of the Transport for London underground network under critical conditions.
Oct 2012 - Jun 2015	Bachelor of Arts in Economics & Finance University of Exeter First class. Analyzed how communication policy affects the Fed Funds futures rate.

Skills

Programming	Rust, Haskell, Elm, Nix, Python, TypeScript
Infrastructure	NixOS, Terraform, AWS, PostgreSQL, GitHub Actions, OpenTelemetry
Frontend	Elm, TypeScript, Tailwind CSS, WebGL, WebGPU