

Specialist in storage systems and concurrency + ≈ 10 years of Rust

WORK EXPERIENCE

Google

2023 — 2025

Senior Software Engineer, [Colossus File System](#)

- Improving write performance for one of the largest distributed storage systems in the world.
- Designed and implemented extensions to fundamental APIs
 - Reached out to disparate stakeholders, designed and implemented cross-stack functionality optimized for performance, low intrusiveness, and maintainability.
- Directed improvements for the semantics for users of the read API.
- Led modernization effort for testing and validation (training engineers cross-functionally on formal-methods based program validation technologies).
- Mentoring junior engineers on high-performance code techniques in C++.
- Maintained an integral legacy system with a huge user base and a massive amount of data under management.

Timescale (Open Source Databasing – [Github Link](#))

2022 — 2023

Staff Software Engineer

Technical

- Drove company strategy defining function telemetry project, on time, in budget, with negligible customer performance overhead, and 1/10th of projected overhead.
- Designed and prototyped columnar execution engine to speed up query performance, projected to provide 4x speedup in the near term with increased projected impact in the next 1-2 years.
- Designed and prototyped numerous successful projects, including cross-group query functionality, script-generation tools, and an embedded sql test runner.
- Improved numerous tech-debt and reliability issues, including fixing access control handling, improvements to build tool and continuous integration suite, workarounds for Postgres serialization issues.
- Built tools analyzing customer behavior, informing company strategic decisions.

Leadership

- Drove planning discussion for the company's next 5-year mission identifying market opportunities and how to leverage our engineering talent.
- Instituted collaborations between management and engineering to optimize product planning.
- Analyzed customer data to ensure product department alignment with customers.
- Interviewed prospective hires and drove hiring decisions.
- Oriented new hires in product and management inculcating an understanding of our product and corporate positioning.
- Mentored engineers and team leads, hosting weekly, bi-weekly and walk-in meetings providing technical and career advice.

Timescale

2021 — 2022

Software Engineer (Tech Lead, [Toolkit Team](#))

Technical

- Implemented libraries and bindings to assist with Rust development of Postgres extensions including, along with other improvements, tools for zero-copy deserialization.
- Designed and implemented function pipelines.
- Designed and implemented Toolkit's continuous integration, versioning, and build suite.
- Implemented and assisted in the implementation of various aggregates for customer use including versions of Hyperloglog, T-Digest, UDDSketch and various statistical functions.

Leadership

- Founded and led team dedicated to improving DB query UX.
- Served as interim manager for the team, led hiring, salary discussions, performance reviews, and team building.
- Trained engineers on using Rust for software development, and how to interoperate with a large, mature C codebase.
- Mentored engineers and team leads.

- Helped a struggling report pivot into a new role as a company-leading product manager.

Timescale

2021 — 2022

Software Engineer ([Observability Team](#))

- Implemented the IO layer connecting the Promscale metric and tracing backend to the underlying database.
- Implemented a concurrent CLOCK LRU cache which serves as the basis for Promscale's in-memory caching.
- Implemented epoch-based concurrency control for ID deletion.
- Improved [Promscale](#) runtime and heap size by orders-of-magnitude.

Timescale

2018 — 2020

Software Engineer ([Core Database Team](#))

- Designed and implemented initial Skip Scan support.
- Designed and implemented columnar compression.
- Designed and implemented automated materialized view (part of Continuous Aggregates).
- Designed and implemented license-key system.
- Implemented initial Postgres 12 support.

PATENTS

- Type-specific compression in database systems ([US11138175B2](#))
- Maintaining up-to-date materialized views for time-series database analytics ([US11030189B2](#))
- Combining compressed and uncompressed data at query time for efficient database analytics ([US10977234B2](#))
- Type-specific compression in database systems ([US10936562B2](#))
- Querying of materialized views for time-series database analytics ([US10963456B2](#))

RESEARCH

Distributed Storage Systems

2016 — 2019

- Created *The FuzzyLog, a partially-ordered distributed shared log abstraction*.
- Provides strong consistency, durability, failure atomicity and scalability, and partition-reliance over a simple API.
- Presented in [OSDI 2018](#)

Machine Learning and Distributed Systems.

2016 — 2017

- Internship at Microsoft Research NYC.

Driver Verification

2014 — 2016

- Contributed to the effort to verify the CertiKOS research OS driver stack
- *Toward Compositional Verification of Interruptible OS Kernels and Device Drivers*. PLDI 2016.

Owner of Research OS

2013 — 2016

- Basis of the ground team for the DARPA HACMS Phase II deliverable.
- Sufficiently implemented to run an autonomous vehicle controller.
- Developed CertiKOS Shared Memory communication; primary interprocess and inter-VM communication mechanism for CertiKOS.
- Ported CertiKOS to ARM.

Large-Corpus Text classification

Summer 2013

- Bar-Ilan University

SKILLS

Programming

- Protocol Design, Concurrency Control, Concurrent Data Structures, Verification, Debugging, Benchmarking, Memory Hierarchy optimizations, Parallel Programming, Compression, Rayon

Programming Languages

- Rust, C, C++, Go, Java, Coq, Python, C#, F#, x86 and ARM assembly

MISC

- Contributed to the Rust Standard Library – [PR 44963](#)

ACADEMIC APOINTMENTS

Yale Teaching Fellow

2014 — 2015

- Building Decentralized Systems
- Advanced Cloud Computing
- Datastructures and Programming Techniques
- Introduction to Programming

EDUCATION

PhD in Computer Science

2013 — 2019

Yale University

- Thesis: *Alternative History: Multilog Systems in Theory and Practice*
- Focus in distributed shared log state machine replication.

MS in Computer Science

2013 — 2015

Yale University

Bachelor of Arts

2009 — 2013

Yeshiva University

- Major: Computer Science, Minor: Mathematics
- Professor Jekuthiel Ginsburg Memorial Award for Excellence in Mathematics and Computers
- Dean's List (all semesters)
- Wilf Family Distinguished Undergraduate Scholarship
- GPA: 3.896, Computer Science and Math GPA: 3.959