

Nicholas Russo

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Summary

Backend engineer with 2.5 years of experience building and optimizing distributed systems. Work includes performance optimization, API development, database systems, and testing infrastructure. Open source projects focus on systems programming and developer tooling.

Skills

Languages: Python (3+ years), Go (3+ years), Rust (1 year), C (1 year), C++ (1 year), JavaScript (<1 year), Mojo (<1 year)

Backend/APIs: FastAPI, Flask, Django, Zenith, Ruby on Rails, gRPC

Databases: PostgreSQL, SQLite, MySQL, Redis

Infrastructure: Docker, Linux (Fedora, Ubuntu, RHEL/CentOS, CoreOS, Gentoo), Kubernetes (Beginner)

Cloud Platforms: AWS, GCP, DigitalOcean, Cloudflare

Tools: Git, GitHub Actions, Zed, Neovim, mise, uv, Ghostty, Fish, ripgrep, fzf, fd, Tailscale

Experience

Software Engineer

January 2021 – May 2023

Omnitier, Inc.

- Reduced Python backend service runtime by ~90% (45 min → 5 min) by migrating to `os.scandir()` and Path objects, minimizing filesystem system calls
- Built comprehensive regression testing infrastructure using Go and Python, improving code stability across distributed services
- Developed gRPC API integrations and enhanced React frontend features, maintaining full-stack service reliability

Projects

seerdb | github.com/omendb/seerdb | *Rust, Storage Engine, Database Systems*

- Research-grade storage engine with ALEX learned indexes beating RocksDB 2.14x on writes, 1.12x on reads. Implements WiscKey key-value separation achieving 4.82x better write amplification than traditional LSM trees

OmenDB | *Rust, Vector Database, Database Systems*

- Embedded vector database in Rust implementing HNSW indexing and binary quantization. RocksDB storage backend with MVCC transactions

Pacabot | *Python, AI/ML, Finance*

- AI trading bot with multi-agent analysis system using 13 data sources including market data, SEC filings, news, and social sentiment. Real-time research capability with automated risk management. Production-ready and running 24/7

Zenith | github.com/nijaru/zenith | *Python, Web Framework, API Design*

- Python web framework with chainable query APIs, zero-config setup, and async request handling. Built for developer experience and production performance

sy | github.com/nijaru/sy | *Rust, CLI Tools, Systems Programming*

- File synchronization tool in Rust implementing delta sync with streaming architecture. 2-11x faster than rsync through parallel transfers and optimization

Awards

2nd Place & Ingenico Winner, Money 20/20 Las Vegas 2016 | *Team Kairos*

- Developed cross-terminal payment application with REST API for business partnerships. Built with Go and PostgreSQL, deployed on CoreOS

Education

42 Silicon Valley

Computer Science

2018 – 2020

Fremont, CA

Las Positas College

Computer Science

2014 – 2015, 2016 – 2018

Livermore, CA

- Computer Science Club President 2016 – 2017

Dev Bootcamp

Web Development

March 2016 – May 2016

San Francisco, CA