

# Nicholas Russo

nijaru7@gmail.com | github.com/nijaru | nijaru.com

## Summary

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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

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**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

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### 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

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### OmenDB | *Rust, Vector Database, Database Systems*

- PostgreSQL-compatible vector database in Rust implementing HNSW indexing, binary quantization, and hybrid HTAP architecture with ALEX learned indexes. 1M vector validation complete with 367 tests passing

### Zenith | [github.com/nijaru/zenith](https://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](https://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

### Kombrucha | [github.com/nijaru/kombrucha](https://github.com/nijaru/kombrucha) | *Rust, Package Management, Developer Tools*

- Homebrew-compatible package manager with fully parallelized API operations and in-memory LRU caching. 5.5x faster for upgrade operations

### Pacabot | *Python, AI/ML, Finance*

- AI trading bot using DeepSeek with 3 specialized analyst subagents and 13 data sources. Production-ready with real-time research capability, multi-timeframe analysis, and risk management. Running 24/7 on paper trading

## Awards

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### 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

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### 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*