ISAAC SCHWARZ

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SUMMARY

Computer science graduate (B.S., Cum Laude) focused on backend and distributed systems, primarily in Go and Rust. Built a Kubernetes-style container orchestrator in Go backed by a Raft-replicated Rust store over gRPC, a Go REST and WebSocket backend deployed on AWS with CI, and a Rust test framework that runs on physical NVMe SSDs for SanDisk.

EXPERIENCE

Industry-Sponsored Capstone Project – SanDisk Aug 2025 – Apr 2026
SanDisk & Northern Arizona University Flagstaff, AZ

- Designed and implemented a Rust framework for automated testing of NVMe SSDs, used internally by SanDisk engineers.
- Specified NVMe drive behavior in TLA+ and used the TLC model checker to generate test sequences that check the hardware against a formal specification.
- Built an execution engine that translates generated sequences into NVMe commands and runs them on physical drives.
- Delivered documented, maintainable code to an industry sponsor as part of a team project.

PROJECTS

Dinghy | *Go, Rust, gRPC*

- Distributed system in Go: a container orchestrator modeled on Kubernetes architecture and principles.
- Built a scheduler that places containers onto nodes, and controllers that run reconciliation loops to drive the cluster toward its declared desired state.
- Built a distributed key-value store in Rust, replicated with the Raft consensus algorithm, as the source of truth for cluster state.
- Connected the Go control plane to the Rust store over gRPC, with the service interface defined in Protocol Buffers.

NYT RPG | *Go, TypeScript, SQLite, Docker, AWS*

- Real-time multiplayer web RPG with a Go backend and TypeScript client.
- Designed a REST API for authentication and game features, backed by a SQL database (SQLite).
- Handled concurrent WebSocket connections in Go to keep shared game state synchronized across live players.
- Containerized with Docker and deployed on AWS through a CI pipeline in GitHub Actions.

HttpGo | *Go*

- HTTP/1.1 server implemented from scratch in Go, handling concurrent requests across goroutines.
- Currently adding chunked transfer encoding and reverse proxy functionality.

Homelab | *Proxmox, k3s, Terraform, Prometheus, Grafana*

- Run a virtualized Linux homelab on Proxmox hosting a Kubernetes (k3s) cluster, with infrastructure managed as code in Terraform.
- Built metrics, dashboards, and alerting with Prometheus, Grafana, and Alertmanager to monitor cluster and service health.

TECHNICAL SKILLS

Languages: Go, Rust, Python, Java, C, C++, SQL, TypeScript/JavaScript, Bash, TLA+
APIs & Data: REST APIs, gRPC, Protocol Buffers, WebSockets, MySQL, SQLite, MongoDB
Infrastructure: Docker, Kubernetes (k3s), AWS, Terraform, GitHub Actions (CI), Prometheus, Grafana, Linux, Git, Make
Concepts: Distributed systems (Raft), concurrency, networking, data structures & algorithms, testing & formal specification

EDUCATION

Northern Arizona University Flagstaff, AZ
Bachelor of Science, Computer Science – Cum Laude, GPA: 3.73 Aug 2023 – Apr 2026
Relevant coursework: Database Systems (MySQL), Computer Networking (C, Python), Data Structures (C, C++), Object-Oriented Programming (C++), Artificial Intelligence (Python)

Pima Community College Tucson, AZ
Dual enrollment during high school – 50 credits, 16 in computer science Aug 2019 – May 2023

ADDITIONAL WORK EXPERIENCE

Production Cook, Cracker Barrel, Flagstaff, AZ Sep 2025 – Present
Prep Cook, Zona 78, Tucson, AZ Jun 2024 – Jul 2025
Nursery Worker, Civano Garden Center, Tucson, AZ Jun 2021 – Aug 2023