

Nathan Gopee

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EDUCATION

- **State University of New York at New Paltz** Jan. 2025 – Present
M.S. Computer Science GPA: 4.0
- **State University of New York at New Paltz** Aug. 2021 – Dec. 2024
B.S. Computer Science New Paltz, NY

EXPERIENCE

- **Graduate Teaching Assistant** Jan. 2025 – Present
SUNY New Paltz
 - Instructed 50+ students in Assembly Language, Computer Architecture, and Programming Languages through labs, office hours, and review sessions
 - Developed and integrated LCC.js, an interactive web compiler toolkit for classroom demonstrations
- **Graduate Lab Manager & Systems Administrator** Aug. 2024 – Present
SUNY New Paltz
 - Architected enterprise SSO infrastructure managing 30+ Linux servers at hydra.newpaltz.edu
 - Deployed local LLM infrastructure, configured 3D printer farm, and implemented container orchestration across servers
 - Implemented network security, centralized logging, admin dashboards, and automated CI/CD pipelines for the department

PROJECTS

- QView3D — 3D Printer Farm Management** 🐍 Python 🚀 Go 🏠 Vue 🍷 Flask 🗣️ PySerial 🗄️ SQLite 📦 Express
 - Led development on an open-source capstone project enabling simultaneous coordination of multiple 3D printers
 - Drove architectural refactors using Agile with GitHub Projects; implemented intelligent job routing, live GCode visualization, print history with error logging, multi-OS/printer support, emulators, and remote queue management

- ScuffedK8 — Lightweight Container Orchestrator** Go 🏠 K8s 🔄 gRPC 📡 WebSocket ☁️ REST
 - Built a Kubernetes-inspired orchestrator to explore container scheduling internals, with custom algorithms distributing workloads based on resource availability and node health
 - Extended the Go framework to create **ClusterShip**, a game that teaches container orchestration through battleship-style gameplay

- ScuffedRedis — 3D Cache Visualization** 🇨🇵 C++ 🏠 React 🎮 Three.js 🍷 Node 📡 Socket.IO 🐳 Docker 📦 nginx
 - Developed a Redis-inspired cache server in C++ with interactive 3D visualization—cache hits glow green, misses flash red—to teach caching patterns intuitively
 - Implemented Zipf distribution to simulate realistic web traffic using `std::unordered_map` for O(1) lookups paired with doubly-linked lists for O(1) LRU eviction

- Malware Classification Research — Security ML Analysis** 🐍 Python 🏠 scikit-learn 📦 pandas 📦 NumPy 📦 Jupyter
 - Analyzed the CIC-MalMem-2022 dataset using machine learning models to identify malware patterns and security threats
 - Implemented multiple classification algorithms to detect suspicious API call patterns and code injection signatures in memory dumps

- Fibonacci Fractal Engine — Distributed Computing** 📦 Java 🔄 gRPC 🏠 Vue
 - Led a team to build a multi-threaded distributed fractal generation system with HashMap caching, reducing computation time and improving scalability; tested with JUnit and Mockito
 - Architected Java backend with gRPC for inter-node communication while Vue.js renders mathematical art patterns in real time

- Danmomo — Multiplayer Physics Game** 🎮 Godot 🍷 Node 📡 WebSocket 🌐 AWS ☁️ REST
 - Developed a Suika-inspired multiplayer game where players compete to merge fruits, with physics synchronized across clients via low-latency networking
 - Engineered real-time state synchronization through WebSocket connections with AWS-hosted leaderboards

- Homelab Infrastructure — Enterprise Setup** 🐳 Docker 🏠 K8s 🏠 Linux 📡 Prometheus 📦 Grafana 📦 Traefik
 - Building multi-node cluster (Proxmox/Kubernetes/Rancher) on repurposed hardware with GPU nodes for ML workloads and Longhorn distributed storage; includes NAS, VPN, and local hosting
 - Monitoring via Prometheus/Grafana, routing with Traefik ingress, securing via internal SSO; upgrading to 100GbE Mellanox QSFP28 NICs with InfiniBand for HPC networking

TECHNOLOGIES & SKILLS

Languages

📦 Java 🚀 Go
🇨🇵 C++ 🇨🇵 C
🐍 Python 📦 JS/TS

Frontend

🏠 React 🏠 Vue
🎮 Three.js 🔄 Tailwind

Backend & APIs

🍷 Node 🍷 Flask
📦 Express ⚡ FastAPI
☁️ REST 🔄 gRPC

Databases

🗄️ PostgreSQL 🐪 MongoDB
📦 SQL 📦 Redis

Tools & Cloud

🐳 Docker 🏠 K8s
🔗 Git 🔄 Jenkins
🏠 Linux 🌐 AWS
🇨🇵 GCP 📦 Azure
📦 Nginx 📦 Traefik
📦 Terraform 🐙 GitHub Actions
📦 Quartus Prime

Certifications

📦 Cloud/DevOps (OpenShift, Cloud Sec, DevOps)
📦 Networking (LAN/WAN, MPLS)
📦 Security (Ethical Hacking, Kali Linux)
🐙 GitHub Essentials
📦 (Office 365, Cyber, Sys Admin, Software Dev)