Neel Tamtam

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Skills

- **Programming Languages**: C++, C, Assembly, Rust, Python, Java
- **Graphics & Computing**: CUDA, TensorFlow, PyTorch, OpenGL, Thrust
- **Embedded Systems**: FreeRTOS, Microcontrollers, IoT Protocols
- **Frameworks & Libraries**: Tokio, Axum, Leptos, Django, Scikit, Pandas
- **Web & Cloud**: AWS, Docker, MongoDB, PostgreSQL, Apache Airflow

Experience

Software Engineer, National Library of Medicine July 2024 — Present
National Institutes of Health *Remote*

- Built AI/ML anomaly detection pipeline for 4.5M medical devices using Python Scikit, SBERT, and Apache Airflow
- Oversaw AWS stack (CloudWatch, S3, EC2, OpenSearch) to support secure and scalable health data systems
- Managed database operations for DailyMed and AccessGUDID websites using both PostgreSQL and MongoDB
- Migrated batch processes to Apache Airflow, reducing average job runtime by 40% via parallel task execution

Undergraduate Research Scholar Jan 2023 — Aug 2023
International Research Fellow *Japan, South Korea*

- Analyzed video game platform usage patterns across Japan and South Korea using Python for data aggregation
- Investigated correlations between digital platform trends and indicators of socially-induced stress patterns

Notable Projects

Ray Tracing Simulator, Collaborative - 2 Developers —

- Developed a real-time ray tracing simulator with CUDA-accelerated rendering and OpenGL-based visualization
- Implemented lighting models including diffuse, specular, shadows, and reflections with toggles via GUI
- Utilized CUDA/OpenGL interop using Pixel Buffer Objects (PBOs) for zero-copy GPU memory sharing
- Created unit tests for geometric intersection routines, BVH construction, and math utilities

Multiplayer Japanese Kanji Game, Independent —

- Developing a real-time multiplayer kanji guessing game with custom lobbies and performance tracking
- Built robust system using Rust Axum for backend, Leptos for frontend, and PostgreSQL for data storage
- Implemented WebSockets enabling real-time gameplay with sub-100ms latency for up to 20 concurrent users
- Fostering a growing user base of Japanese learners from a variety of learning communities

Custom Real-Time Operating System, Independent —

- Designed and implemented a custom Real-Time Operating System with priority-based round-robin scheduling
- Achieved deterministic task execution with 100% on-time completion of high-priority tasks within 5ms
- Tested RTOS kernel in embedded C, ensuring task scheduling and IPC with zero failures across 100+ test cycles
- Implemented assembly-based context switching, preserving task state between registers and stack in <10µs

Education

Austin College Sherman, Texas
Bachelor of Computer Science and Japanese *Aug 2020 — May 2024*

Osaka Daigakuin University Osaka, Japan
Semester Abroad - Japanese Language *Jan 2023 — May 2023*

Yonsei University Seoul, South Korea
Summer Abroad - Machine Learning *June 2023 — Aug 2023*

Certifications

- **Technical**: NVIDIA CUDA Accelerated Computing, AWS Cloud Practitioner, LPI Linux Essentials

- **Language**: Japanese Language Proficiency Test - N1 (Bilingual)