

Brian Hsu

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EDUCATION:

University of Michigan, Ann Arbor, College of Literature, Science, Arts

- B.S. Computer Science & B.S. Cognitive Science, Computation Track, GPA 3.9/4

WORK EXPERIENCE:

Los Alamos National Laboratory, *Supercomputing Engineer*

May 2026 - Aug 2026

- Architected and deployed a HPC cluster from scratch using Rocky Linux, iPXE, and DHCP, automating node provisioning and OS imaging across compute and storage systems
- Engineered high-performance networking with InfiniBand and Ethernet, and configured SLURM for scalable job scheduling and distributed workloads
- Benchmark 400Gb/s+ networking by measuring throughput/latency across large-scale data transfers, identifying bottlenecks in HPC and AI workloads
- Test and optimize data transfer tools (rsync, scp, custom TCP/UDP pipelines) across heterogeneous systems (e.g., multi-site clusters, Ultra Ethernet)

Memorial Sloan Kettering Cancer Center, *Scientific Computing Engineer*

June 2025 - Sep 2025

- Shipped new Open OnDemand dashboard (Ruby on Rails) for MSK's HPC cluster, with web-based job launching, Recently Used Apps, real-time usage visuals, reducing new-user support tickets by **20%**
- Developed interactive resource-monitoring charts using Pandas + Chart.js, integrating with SLURM APIs to display real-time CPU/GPU utilization across partitions.
- Automated HPC usage data parsing with Python, Bash, Ansible, streamlining reporting workflows and onboarding 18 new labs

Lyft, *Data Analytics Intern*

June 2024 - August 2024

- Built SQL-based detection pipelines to analyze 44,000+ users and 15-minute ride interval logs, identifying abnormal reward accumulation patterns and cross-period abuse behaviors in the Bike Angels system
- Defined fraud and system-exploitation detection rules across 1,800+ bike stations, including membership sharing and station "flipping" behaviors, translating policy edge cases into enforceable data logic
- Implemented data-driven heuristics to detect station flipping patterns, reducing operational costs by 7% and lowering projected annual expenses
- Analyzed Bike Angel scoring algorithms to identify inefficiencies, leading to proposals that incentivized short-distance rides and reduced negative user costs by 12%, generating updated 2025 milestones

PROJECTS:

Operating Systems Simulation (C++)

- Built a CPU scheduling simulator implementing context switching, multithreading, and synchronization primitives (mutex locks, condition variables) to model concurrent execution and scheduling policies
- Developed virtual memory and disk subsystem simulator, implementing page eviction, copy-on-write, and low-level bit-level disk operations for read/write behavior analysis
- Designed a file system simulator with inode-based architecture, supporting locking mechanisms, directory traversal, and concurrent file access operations

MHEAL: Project Alivio *Software Lead*

- Deployed an Ulcer App prototype using React and Flask, enabling patient tracking, card filtering, and data calculations
- Integrated AWS CI/CD pipeline for production using Docker, S3 Amazon ECR, EC2, Elastic Beanstalk
- Conducted unit tests and deployed the website for feedback from Guatemalan medical students.

Leventhal Lab *Correlating 3D Pose Estimation with Striatal Dopamine*

- Trained convolutional neural networks (CNNs) using PyTorch / TensorFlow for 3D animal pose estimation
- Built end-to-end data pipelines in Python (NumPy, OpenCV, Pandas) for frame extraction, synchronization, and triangulation of multi-view recordings, handling 10M+ data points across storage and compute workflows
- Designed visualization and analysis workflows in MATLAB and Python to inspect reconstructed 3D trajectories, variance metrics, and behavioral features for downstream neuroscience analysis
- Profiled pipeline performance through GPU utilization tuning, batching strategies, and I/O bottleneck reduction.

SKILLS:

- **Systems & Distributed Computing:** Linux (system administration, networking), AWS (EC2, S3), Docker (Podman), CI/CD pipelines, RESTful APIs, Agile workflows
- **Programming Languages:** Python, C/C++, Java, JavaScript (React), R, MATLAB, Ruby, HTML/CSS, LaTeX
- **Tools/Platforms:** Git, Docker, CI/CD pipelines, VSCode, Jupyter, Pandas, Excel
- **Languages:** English, Mandarin, Taiwanese
- **Interests:** Travelling, Content Creation, Dance