Hsu, Chun-Yuan

My Portfolio | chyhsu@umich.edu | Chyhsu | Chun-Yuan Hsu

Skills

Languages: Python, C++, Go, SQL, TypeScript, Bash Script, Verilog

Frameworks: Node.js, React

Developer Tools: Docker, Docker Compose, Kubernetes, GitLab CI/CD, NATS, Jira, Git, Sprint/Scrum

System: Linux(Debian, Arch), Mac, Windows

Database: MongoDB, Couchbase, ChromaDB, SQLite, PostgreSQL

Cloud Platform: Google Cloud Platform, AWS

Experience

Backend R&D Internship, QNAP, Taiwan Jan 2025 – Jul 2025

- Developed a semantic **Jira issue search** service using text embeddings (ChromaDB) and integrated AWS Bedrock LLM to generate resolution suggestions, enhancing developer productivity by 50%.
- Engineered an **Jira search MCP server**, enabling developers to query issues information via coding IDE.
- Migrated the Device Avatar APIs service from Python to Go for improved performance by 30% and deployed it on Kubernetes; implemented token-based authentication and unit tests.
- Contributed to database benchmark tests comparing MongoDB and Couchbase to inform technology selection.
- Diagnosed and resolved a DDNS worker failure issue during RabbitMQ scaling period.
- Pointed out and resolved a memory leak issue in cloud product by first inspecting Grafana metric and then tracing code.
- Resolved NATS message production failures during AWS spot instance scaling by reconfiguring NATS server replicas.

Projects

Lilac

- Designed and implemented a cross-cloud IaC lifting framework that automatically reconstructs Terraform configurations from existing deployments ("brownfield" infrastructure) across Azure, Google Cloud, and AWS.
- Developed a neurosymbolic pipeline that integrates Large Language Models (LLMs) with symbolic verification to learn resource–dependency mappings from cloud APIs and provider documentation.
- Conducted large-scale evaluation on real cloud environments, achieving higher accuracy and coverage than existing tools (e.g., Terraformer, aztfexport, gcloud export) while maintaining correctness and reproducibility.

VizThinker VizThinker

- An innovative graph-based interface for interacting with large language models (LLMs), reimagining traditional linear chatboxes into a visual conversation graph.
- Allows users to branch, explore, and organize their chat histories as interconnected nodes for deeper idea navigation.
- Supports exporting full conversation graphs—including nodes and edge relations—into structured Markdown files.
- Deployed on Google Cloud Platform with a modern stack of Node.js, React, and Python.

File-Translator file-translator

- Developed a tool using LLM API to translate English PDF documents into Traditional Chinese, preserving the original format.

OS-Nachos OS-Nachos

- Implemented and documented core OS concepts including system calls, multiprogramming, virtual memory, and file systems using the Nachos instructional OS.

MIPS-CPU-Architecture MIPS-CPU-Architecture

- Constructed a MIPS CPU architecture from the ground up using Verilog.

Education

Master of Data Science, University of Michigan – Ann Arbor, MI, USA Sep 2025–Present

MS in Computer Science, National Tsing Hua University – Hsinchu, Taiwan Sep 2022–Jan 2025

Thesis: Quantum Event Identification and Learning Procedures

BS in Civil Engineering, National Cheng Kung University – Tainan, Taiwan Sep 2018–Jun 2022