

# CHUNG-WEI CHEN

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## Education

### Carnegie Mellon University

Sep. 2024 – May 2026

*M.S. in Information Networking — GPA: 3.76/4.0*

*Pittsburgh, PA*

*Related Course: Database Systems, Distributed Systems, Cloud Infrastructure, Search Engine*

*Parallel Computer Architecture and Programming*

### National Yang Ming Chiao Tung University

Sep. 2019 – June 2023

*B.S. in Computer Science — GPA: 3.99/4.3*

*Hsinchu City, Taiwan*

*Related Course: Database Systems, Network Security, Network Programming,*

*Principles of Communications and Wireless Networks*

## Skills

**Programming languages:** C/C++, Python, Java, SQL, JavaScript, C#, PHP, HTML/CSS

**Skills:** Database Systems, Distributed Systems, Cloud Computing, Computer Network, High Performance Computing

**Technologies/Frameworks:** Linux, AWS, GCP, Docker, REST API, OpenMP, MPI, CUDA, WireShark, Selenium, Git

## Work Experience

### Industrial Technology Research Institute

March. 2024 – July 2024

*Software Engineer*

*Hsinchu City, Taiwan*

- Developed and managed a **3D object Web Viewer** for Gaussian Splatting using Three.js, Nginx, and Google Cloud Platform. Ensured a responsive and user-friendly experience for viewing realistic 3D models
- Integrating an automatic background removal feature into 3D Gaussian Splatting **training pipeline**, resulting in a 3-point increase in Peak Signal-to-Noise Ratio (PSNR)

### Industrial Technology Research Institute

Feb. 2023 – Sep. 2023

*Software Engineer Intern*

*Hsinchu City, Taiwan*

- Developed a Unity program allows users to interact with products and live streams in Virtual Reality (VR), enhancing product size perception and boosting informed purchase decisions by 32%
- Developed a Selenium-based **test automation** framework that replaced repetitive manual QA processes, significantly reducing testing time and improving reliability.

## Selected Projects

### Parallel VLSI Wire Routing Engine | *OpenMP, MPI, High-Performance Computing, C++*

Oct. 2025 – Nov. 2025

- Built a high-performance VLSI wire-routing engine using OpenMP and MPI, implementing within-wire and across-wire parallelism
- Achieved strong scalability on multicore and multi-node systems (**10.8× speedup on Pittsburgh Supercomputing Center's nodes**) through workload balancing and optimized message-passing communication patterns.

### Cloud-Based E-Commerce Microservices System | *AWS, Docker, Kubernetes, REST API*

March 2025 - May 2025

- Designed and deployed cloud-native e-commerce system using **AWS, Docker, and Kubernetes**
- Implemented circuit breaker logic for external API reliability, Kafka-based asynchronous customer notification via email, and MongoDB-backed query service using CQRS and data replication.

### Database Buffer Pool Manager | *Database Management System, C++*

Feb. 2025

- Implemented a buffer pool manager for a disk-oriented database management system (DBMS), responsible for efficiently managing pages between disk and memory
- Optimized memory access and synchronized page access, ensuring consistency in **multi-threaded environment**

### Transparent Remote File Operations | *Distributed System, TCP, C, Java*

Jan. 2025

- Built a **Remote Procedure Call (RPC) system** that supports remote file operations (open, read, write, etc.) over TCP while preserving the same interface as local file operations
- Implemented a **check-on-use caching** mechanism to reduce redundant remote calls and significantly decrease network traffic.

### Text-based Search Engine System | *Apache Lucene, Python*

Aug. 2024 – Dec. 2024

- Implemented a text-based search engine using various scoring method including BM25, feature-based models, and BERT for semantic retrieval.
- Implemented **personalized search and result diversification** algorithms to improve relevance and user experience
- Leveraged statistical analysis and lexical retrieval models to enhance search accuracy, including methods for handling term frequency, inverse document frequency, and query expansion