Yun-Tung (Winona) Chu

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EDUCATION

University of Washington Seattle, WA

M.S. in Electrical and Computer Engineering | GPA: 3.86 / 4.0 Expected June 2026

- Relevant Coursework: Distributed Systems, AI For Mobile Robots, LLMs, AR/VR, Embedded System in software

National ChengChi University Taipei, Taiwan

B.S. in Management Information Systems | GPA: 4.04 / 4.3 January 2024

- Relevant Coursework: Data Structure, Operating System, Database Management Systems, Algorithms

PROFESSIONAL EXPERIENCE

Fullstack Software Engineer Jan 2025 - June 2025

astrolabe analytics (UW Capstone) Seattle, WA

- Software Development: Architected a scalable web service using React and FastAPI backed by AWS S3, implementing robust database design to handle complex battery datasets.
- Cross-functional Team Collaboration: Spearheaded collaboration with Chemical Engineers, translating complex domain requirements into technical schemas to ensure analytical precision.
- Refactoring & API Integration: Leveraged OpenAI API to refactor and standardize noisy data structures, automating schema alignment to resolve critical data science research bottlenecks. *[Website]*

Backend Engineer Internship Aug 2023 - Dec 2023

Hualiteq International Corporation Taipei, Taiwan

- Developed IVR (Interactive Voice Response) backend logic using JavaScript/MSSQL and integrated Google TTS (Text-to-Speech) API for dynamic voice response, enabling real-time user interactions.
- Established GitLab CI/CD pipelines for a 10+ person team, enhancing development efficiency and stability.

Software Development Engineer Internship July 2022 - Aug 2022

Innodisk Corporation Taipei, Taiwan

- Engineered the full-cycle defect detection pipeline for edge deployment and obtained significant inference performance while maintaining sufficient detection accuracy.
- Optimized the YOLOv4-tiny model on Xilinx KV260 using Vitis-AI and Gaussian data augmentation, achieving 95% mAP at 0.45 IoU in detecting screw welding defects while improving inference speed by 50+ FPS.
- Containerized full application using Docker under Linux to ensure consistent and reliable environments.

PROJECTS

Research Assistant at Information Processing Lab (UW) July 2025 - Present

- Took accountability for architecting a scalable Machine Learning Infrastructure and MLOps pipeline using Vega Prime, generating 50,000+ images to support data-driven model training.
- Optimized YOLOv8-tiny architecture using PyTorch, achieving 84% mAP across diverse weather conditions and meeting edge deployment constraints.
- Demonstrated the ability to lead and mentor others by conducting technical enablement sessions for 5+ researchers, facilitating knowledge transfer on pipeline operations.
- Independently developed novel integration of Generative AI Foundation Models (Hunyuan3D-Mirror) with depth-based layering in Blender to synthesize photorealistic 3D environments for training data.

Sharded Key-Value Distributed System Sept 2025 - Dec 2025

- Architected a fault-tolerant, linearizable key-value storage system using Multi-Instance Paxos for consensus and log replication, ensuring data consistency across server failures and network partitions.
- Implemented a Shard Master for zero-downtime dynamic re-sharding and engineered Two-Phase Commit (2PC) transactions to guarantee ACID properties.

HoloLights: Color Vision Deficiency Assistance Software Module April 2022 - Dec 2023

- 1st Place Winner, 2023 National Universities Innovation Competition: Developed a C#/Unity MR app on HoloLens 2, optimizing socket latency by 100ms for real-time edge-server synchronization.
- Integrated TensorFlow Object Detection (94% mAP) and custom color transformation algorithms to assist users with color deficiencies. *[Website]*

TECHNICAL SKILLS

Programming Languages: Python, Java, JavaScript, C#, Bash, SQL, Object-Oriented Programming

Web and Backend: React, TypeScript, HTML/CSS, RESTful APIs, FastAPI, Postman

Database and Cloud: MySQL, MSSQL, PostgreSQL, AWS S3, Git, GitHub, GitLab, Docker

ML Frameworks: TensorFlow, PyTorch, Scikit-learn, NumPy, Pandas