Po-Hao Huang

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Education

University of Illinois Urbana-Champaign — Champaign, IL
Master of Computer Science (MCS) — *Aug 2024 – Dec 2025 (Expected)*

National Taiwan University — Taipei, Taiwan
Bachelor of Science in Computer Science and Information Engineering (CSIE) — *Sep 2017 – Jun 2021*

- **Honors**: Dean's List Award - 1st semester of 2020-2021 at EECS CSIE
- **Last Two Year GPA**: 4.02 / 4.3

Experience

Esri — Redlands, CA
Software Development Intern — *May 2025 – Aug 2025*

- **Responsibilities**: Accelerated the ArcGIS Python API with Rust and co-designed a new Rust core for geometry primitives for efficient vectorized operations
- Designed a unified, zero-copy geometry I/O architecture in Rust, achieving **10× faster** deserialization
- Optimize import time by **66%** by restored lazy imports; vectorized geometry operations for **250**× faster large-DataFrame handling
- Refactored and unified implementations to fix conversions issues between different geometry formats
- **Relevant Skills**: Python, Rust, PyO3, REST API, Python profiling and visualization, Git

Quantrend Technology — Taipei, Taiwan
Machine Learning Engineer (High Frequency Trading) — *Jun 2021 – Aug 2023*

- **Enhanced the online trading model's returns by 5%** by proposing a novel data sampling and labeling method, resulting in outputs more closely approximating real market performance
- Designed **over 30%** of the Machine Learning infrastructure in Rust and Python, from data preprocessing, model training to backtesting and validation
- Independently designed the company's proprietary Rust implementation of TensorFlow Models
- Developed **20%** of the features used in our online trading models
- Designed **over 70%** of the company's Machine Learning metrics
- **Relevant Skills**: Rust, Python, Git, OOP, Software Design Principles, Machine Learning, Linear Algebra, Stochastic Processes, Time Series Analysis, Quantitative Finance, High Frequency Trading

OmniEyes — Taipei, Taiwan
Undergraduate Research Assistant — *Sep 2020 – Jun 2021*

- Enhanced the accuracy of the computer vision-based mapping system by detecting and aligning new signboards using Metric Learning techniques
- Designed data augmentation mechanism to synthesize signboard images, improving model generalization
- Surveyed and experimented with Metric Learning techniques (Siamese, Triplet) for fine-tuning purposes
- **Relevant Skills**: Python, PyTorch, Machine Learning, Contrastive Learning, Object Detection

Projects

Final Project: Convolution Kernel Optimizations | *CUDA, C++, Parallel Programming* — Fall 2024, UIUC

- Fused im2col + GEMM + permutation into a single CUDA kernel to cut global-memory traffic and launch overhead while preserving accuracy for any batch size.
- Leveraged Tensor Cores (WMMA) with shared-memory tiling, register blocking, __restrict__, and manual loop-unrolling; handled edge tiles and mixed layouts.
- Profiled with Nsight Systems/Compute to drive changes in occupancy, memory coalescing, L2 reuse, and shared-memory bank-conflict avoidance.

Skills

Languages: C/C++, CUDA(C++), Python, Java, Rust, HTML/CSS, JS, php, SQL
Software Design: Object-Oriented Programming (OOP), Design Pattern, Open-Closed Principle, Git, Docker, GCP, Databases(MySQL, MongoDB, Neo4j), Parallel Programming
DS/ML: PyTorch, TensorFlow, NumPy, Pandas, Matplotlib, seaborn, Machine Learning, Deep Learning, Computer Vision, Computer Graphics, Contrastive Learning, 3D Gaussian Splatting, Time Series Forecasting