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 geometry I/O architecture with a zero-copy parsing/building framework in Rust; laid groundwork for bidirectional builders/readers
- Performed Python profiling and visualization to identify bottlenecks
- Optimize import time by **66%** by restored lazy imports; vectorized geometry operations for **250**× faster large-DataFrame handling
- Identified critical logic errors and duplicated, inconsistent geometry-conversion paths; refactored and unified implementations to ensure reliable conversions between different geometry formats
- **Relevant Skills**: Python, Rust, PyO3, Python profiling and visualization, Git

Quantrend Technology — Taipei, Taiwan
Machine Learning Engineer — *Jun 2021 – Aug 2023*

- Designed **over 30%** of the Machine Learning infrastructure in Rust and Python, including data preprocessing and model training
- Independently designed the company's proprietary Rust implementation of TensorFlow Models
- Developed **20%** of the features used in our 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

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

- Collaborated with senior engineers to enhance their computer vision-based mapping system by detecting newly emerged signboards using Metric Learning techniques
- Surveyed and experimented with Metric Learning techniques (Siamese, Triplet) for fine-tuning purposes
- Designed a data augmentation mechanism to synthesize new signboards data and improve model scores
- **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
Security: Reverse Engineering in Windows and Linux, overflow, stack pivoting, GOT hijack, ROP chain, use-after-free
DS/ML: PyTorch, TensorFlow, NumPy, Pandas, Matplotlib, seaborn