

# Hongyi (Harry) Wang

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## EDUCATION

### Northwestern University

September 2023 ~ June 2026

*B.S. Computer Science and Mathematics*

- **GPA:** 4.00/4.00; **ACT:** 36/36
- **Relevant Coursework:** Deep Learning, Operating Systems, Computer Networking, Discrete Math (Teaching Assistant), Scalable Software Architectures, Computer Systems, Differential Equations, Probability & Stochastic Processes

## EXPERIENCE

### Northwestern Financial Technologies Club

February 2024 ~ Present

*Developer*

- Developed and implemented a high-frequency trade bot in Python; placed 3<sup>rd</sup> in NU High Frequency Trading Competition.
- Explored options theory & developed a SARIMA time series model to predict the closing prices of Nasdaq traded stocks.

### Children's Hospitals Neonatal Consortium

May 2024 ~ September 2024

*Full-Stack Developer Intern*

- Developed a full-stack web application with a backend server built with Node.js and a PostgreSQL database that predicts health outcomes for extremely pre-term infants for CHNC.
- Selected to receive Northwestern's \$6,500 Feldmann fellowship for the Summer of 2024.

### A.I. Blockchain Group

February 2024 ~ May 2024

*Machine Learning Intern*

- Designed and backtested trading algorithms for cryptocurrencies, leveraging the QuantConnect API to enhance return potential.
- Reviewed AiB's blockchain technology products, including cloud optimization solutions and play-to-earn (P2E) crypto games.

## PROJECTS

### KernelFlow | High Performance Kernel Convolution Library in C++ | [GitHub](#)

July 2024 ~ Present

- Implemented fast and scalable convolution algorithms using FFT (Fast Fourier Transform) and parallelized with OpenMP.
- Integrates with Python via pybind11 for seamless use in both C++ and Python environments.

### B+ Engine | Scalable B+ Tree Database in C++ | [GitHub](#)

June 2024 ~ Present

- Implemented a balanced B+ Tree database with efficient insertion and search algorithms, optimized for disk-based storage.
- Utilizes disk-based storage to support extreme-scale databases and LRU cache to minimize disk I/O.

### HoloTouch | Remote PC Interaction Application with Computer Vision | [GitHub](#)

July 2024 ~ August 2024

- Designed and implemented an application enabling users to remotely gain/switch access to and control PC utilities, including volume adjustment, screen brightness, mouse movement, and a variety of mouse clicks.
- Trained a CNN for gesture recognition with 4000+ labeled images generated by an automated script as training data.

### Patented Auto-Navigating Smart Cane

February 2021 ~ June 2023

- Designed and developed an FGM (follow-the-gap method) auto-navigating guide bot with LiDAR for the visually impaired.
- Received an utility model patent from the National Intellectual Property Administration of China for this design.

## AWARDS

### International Math Olympiad | British National Training Camp Qualifier

April 2022

### British Physics Olympiad | Top Gold (Round 1); Silver Medal (Round 2)

October 2021

### International Economics Olympiad | Placed 6<sup>th</sup> Internationally & 1<sup>st</sup> Nationally in the Open Track

June 2021

## TECHNICAL SKILLS

- **Programming:** Python, C, C++, Java, Golang, SQL, JavaScript, HTML5, CSS, x86 Assembly, LaTeX
- **Frameworks & Libraries:** TensorFlow/Keras, Scikit-Learn, OpenCV, OpenAI Gym, MPI, OpenMP, FFTW, Node.JS