Harry Guan

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Education

Northwestern University **Expected Jun. 2027**
B.A. in Computer Science and Mathematics, B.M. in Trombone Performance *Evanston, IL*

- **Cumulative GPA:** 3.9/4.0 | **Major GPA:** 4.0/4.0 | **Dean's List:** 6/6 Quarters
- **Relevant Coursework:** Operating Systems, Computer Networking, Distributed Systems, Database Systems, Parallel Computing, Machine Learning, Design and Analysis of Algorithms, Data Structures and Algorithms, Probability and Stochastic Processes

Experience

LinkedIn **Jun. 2025 – Sep. 2025**
Incoming Software Engineer Intern - System Infrastructure *Mountain View, CA*

IMC Trading **May 2025**
Launchpad - Quantitative Trading Cohort *Chicago, IL*

- Secured **1st place** out of 30 in IMC Trading's ChiMEx futures market-making competition by implementing dynamic bid-ask spread sizing using the **Avellaneda–Stoikov** model and real-time data-feed pipeline monitoring to capture order-flow edge

Susquehanna International Group **Apr. 2025**
Discovery Day - Technology Cohort *Bala Cynwyd, PA*

Overture Games - Music Education Startup (Techstars) **Jun. 2024 – Sep. 2024**
Software Engineer Intern - API Development *Chicago, IL*

- Engineered a Computer Vision **RESTful API** using Audiveris for Optical Music Recognition, handling HTTP requests with Python scripting within Flask, and a Node.js backend to convert sheet music to machine-readable formats with **85% accuracy**
- Published an open-source website (sheetmusictomidi.com) on an **AWS EC2** instance using Nginx for load balancing and PM2 for process management, with Google Analytics showing **5,000+ monthly uses, saving 20,000+ hours** of transcription
- Iteratively scaled the API, implementing **automatic file cleanup and storage management**, enabling seamless support for **400+ concurrent users** while ensuring optimal resource utilization across multiple regions with **Auto Scaling groups**

Aigentless - PropTech Startup **Jun. 2024 – Sep. 2024**
Software Engineer Intern - Machine Learning *Chicago, IL*

- Designed an LLM chatbot with **92% accuracy on housing market pricing data** to uncover key traits influencing prices by conducting large-scale web scraping with GraphQL parsing and PyTorch for clustering analysis and regression
- Established and **maintained CI/CD pipelines** using Jenkins, integrated automated testing frameworks with PyTest, and utilized Docker for containerization to ensure consistent environments across development, testing, and production

Projects

Texas Hold'em Poker Solver (GitHub) **Dec. 2024 – Present**

- Developed a PyTorch-based **Counterfactual Regret Minimization solver** to compute Nash Equilibria across over $\mathbf{10^{17}}$ **non-deterministic game states**, leveraging **ordinal bucketing** to reduce game tree analysis computation time by over **78%**
- Created an **open-source** research-focused C++ poker engine library, optimizing source code to **reduce average simulation runtime by 72.31%** by improving memory access patterns for **cache locality** and **streamlining I/O operations**

Prelude Planner (GitHub) **Jun. 2024 – Sep. 2024**

- Spearheaded development of a mobile studio assistant app for Northwestern's Bienen School of Music with a cross-functional team, **enhancing scheduling efficiency by 44%** and enabling efficient file read/write with greedy graph coloring and PostgreSQL
- Administered real-time scheduling updates using Socket.IO, optimized a robust backend for scalability with Node.js and Express, and ensured seamless and reliable communication with notification functionality, user authentication, and data validation

Honors and Awards

IMC Trading Market-Making Competition | *1st Place Overall*

USA Coding Olympiad | *Gold Division, Top 7% in Contestants*

IMC Trading Low Latency Competition | *2nd Place Overall*

JPMorganChase Code For Good Hackathon | *Project Manager, 2nd Place Overall*

Northwestern University Algorithmic Trading Competition | *2nd Place Cryptocurrency Exchange*

American Invitational Mathematics Examination Qualifier (4x) | *Top 5% in the American Mathematics Competition*

Additional

Programming Languages: Python, C++, C, Golang, Rust, Java, JavaScript, Bash, x86 Assembly
Frameworks/Libraries: PyTorch, scikit-learn, PyTest, GTest, NumPy, Pandas, Node.js, Matplotlib, Flask
Infrastructure: UNIX, CUDA, Amazon Web Services, GCC, OpenMP, MPI, Nginx, Jenkins, Docker, Git, GitHub + Actions