

# Harry Guan

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## EDUCATION

### Northwestern University

*B.A. in Computer Science and Mathematics, B.M. in Trombone Performance*

**Expected Jun. 2027**

*Evanston, IL*

- **Cumulative GPA:** 3.9/4.0 | **Major GPA:** 4.0/4.0 | **Dean's List:** 4/4 Quarters
- **Relevant Coursework:** Operating Systems, Distributed Systems, Database Systems, Computer Systems, Parallel Computing, Machine Learning, Analysis of Algorithms, Data Structures and Algorithms, Artificial Intelligence, Stochastic Processes

## EXPERIENCE

### Coinbase

*Incoming Software Engineer Intern - Low Latency Team*

**Jun. 2025 – Sep. 2025**

*San Francisco, CA*

### Overture Games - Music Education Startup (Techstars)

*Software Engineer Intern - API Development Team*

**Jun. 2024 – Sep. 2024**

*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 ([sheetmusic2midi.com](https://sheetmusic2midi.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

*Software Engineer Intern - Machine Learning Team*

**Jun. 2024 – Sep. 2024**

*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
- Developed and optimized Aigentless' B2B2C web platform ([aigentless.com](https://aigentless.com)) using React and FastAPI to create a fully autonomous apartment search experience with **real-time data analytics**, intuitive dashboards, and speedy back-end processing

### Cupertino City Council

*Software Engineer Intern*

**Jun. 2023 – Aug. 2023**

*Cupertino, CA*

- Directed the design and development of a HTML website to streamline communication and information dissemination between campaign managers and voters, significantly contributing to the Cupertino Vice Mayor's **successful re-election campaign**
- Leveraged Google Analytics to pinpoint and implement data-driven UI/UX improvements, **increasing viewer retention by 34%**

## PROJECTS

### Texas Hold'em Poker Solver ([GitHub](#))

**Dec. 2024 – Present**

- Developed a PyTorch-based **Counterfactual Regret Minimization solver** to compute Nash Equilibria across over **10<sup>17</sup> 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

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

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

**TreeHacks 2025** | *Honorable Mention Autonomous AI Agent Track*

**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:** C++, Python, C, Java, TypeScript, Bash, x86 Assembly, L<sup>A</sup>T<sub>E</sub>X

**Frameworks/Libraries:** PyTorch, scikit-learn, PyTest, GTest, NumPy, Pandas, Node.js, Matplotlib, Flask

**Infrastructure:** UNIX, Amazon Web Services, GCC, Nginx, Jenkins, Docker, Git, GitHub + Actions