Anna (Ziyuan) Zhao

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Education

Northwestern University Evanston, IL

Bachelor of Arts in Computer Science, Mathematics, and Linguistics *Expected June 2028*

- GPA: 3.96/4.00, SAT: 1540/1600
- Relevant Coursework: Data Structures & Algorithms, Computer Systems, Functional and Object-Oriented Programming, Machine Learning, Linear Algebra, Multi-variable Calculus, Probability and Stochastic Processes, Computer Networking, Computer Graphics

Experience

Innovation AI June 2025 – August 2025

Software Engineer Intern *San Jose, CA*

- Contributed to development, testing, and deployment of interactive, data-driven web systems; built and optimized **RESTful APIs** and data storage solutions to support scalable and maintainable web services.
- Assisted in diagnosing system bugs and latency bottlenecks; implemented targeted optimizations to improve responsiveness and overall performance, with the mission to enhance accessibility of AI solutions for diverse clients.

Northwestern Machine Learning and Language Lab April 2025 – Present

Research Assistant *Evanston, IL*

- Developed reinforcement-learning framework for training **LLM agents** in stochastic environments, supporting multi-turn rollouts, trajectory-level reward assignment, and analysis of agent training dynamics in research.
- Optimized by implementing configurable **context-window hyperparameter** and refactoring bottleneck routines in Python/C++, reducing inference latency and enabling scalable experimentation for agent training evaluations.

Local October 2024 – April 2025

Full Stack Developer *Evanston, IL*

- Designed website using **React** and integrated **RESTful APIs** to connect with backend event management system.
- Implemented dynamic features such as user sign-up, event creation, real-time event listing, and ticket handling using asynchronous API calls (e.g., `POST /event`, `GET /event`); targeted business owners and high-demand consumers.
- Nominated for **Chicago Innovation Award 2024**: Honoring the Iconic Businesses That Define Our Community.

Northwestern Financial Technologies Club October 2024 – Present

Developer *Evanston, IL*

- Examined quantitative techniques and engaged with topics such as stochastic processes, time series forecasting, optimization methods, and machine learning algorithms for predictive modeling and data-driven decision making.
- Built a fully automated trading pipeline in Python and C++ using **L1 regularization**; optimized and integrated C++ feature computation via **Pybind**, achieving a **3× speedup** over the Python implementation.
- Contributed to a quantitative research framework by implementing and testing a **rolling window feature normalizer** for real-time feature standardization; integrated with a backtesting pipeline for model evaluation.

Projects

Independent Quantitative Trading Project | *Python* May 2025 – June 2025

- Implemented **MACD**, **Heikin-Ashi Candlestick**, **Awesome Oscillator**, **Pair Trading**, and **Monte Carlo Simulation**; used data ingestion, signal generation, backtesting to evaluate model performance across market data.
- Applied quantitative techniques like exponential moving averages and **oscillator divergences** with financial concepts to build a modular codebase enabling risk management, parameter sweeps, and performance analytics.

Texas Hold'em Poker Solver January 2025 – Present

Developer *Evanston, IL*

- Developed a **PyTorch**-based Counterfactual Regret Minimization solver to compute Nash Equilibria across over 10^{17} non-deterministic game states, leveraging ordinal bucketing to accelerate game tree analysis by over **78%**.
- Created an open-source C++ poker engine library and optimized source code to reduce runtime by **4ms** per function call by improving memory access patterns for cache locality, enabling faster simulation runs for poker theorists.

Musie | *Python, JavaScript, HTML, CSS, AWS* April 2024 – June 2024

- Developed web application to read user input for music preference and output a 15-second generated music piece.
- Deployed NLP pipeline for structured data extraction by fine-tuning text-to-struct **Transformers** model using **PyTorch**; customized tokenization and used transfer learning to optimize performance for domain-specific tasks.

Map Modeling | *C++* January 2025

- Used OpenStreetMap (OSM) with **curl library** and **libxml2** to extract data for campus buildings and bus stops.
- Accessed real-time transit data via the Bus Tracker API and developed an interactive travel recommendation tool that computes the shortest path between buildings and bus stops based on live conditions.

Awards

USA Computing Olympiad (USACO) | *Gold Qualifier* January 2023

American Mathematics Competition (AMC) | *AIME Qualifier* November 2022

High School Mathematical Contest in Modeling (HiMCM) | *Team Lead, Meritorious* November 2021

Harvard International Review (HIR) | *Gold Medal* December 2022

North American Invitational Model United Nations (NAIMUN) | *Best Delegate* July 2022

Tournament of Champions (TOC) | *Original Oratory Champion, Public Forum Semi-finalist* May 2023

University Service

Northwestern Chinese International Student Association October 2024 – June 2025

Junior Executive, Department of Administration and Development *Evanston, IL*

- Planned events (**100+ participants**) to assist smoother transitions for Chinese international students and spread traditional Chinese culture, specifically aiming to minimize harmful stereotypes and embrace differences.

Northwestern Department of Asian Languages and Cultures October 2024 – Present

Clerical Aide for the Chinese Language Program *Evanston, IL*

- Undergraduate Teaching Assistant for all Chinese instruction; co-organized cultural and student-bonding events.
- Participated in Prof. Licheng Gu's Translation Project; explored intricacies in **bilingualism**.

Technical Skills

Languages: C++, C, Java, Python, Javascript, HTML, CSS, Racket, LaTeX
Developer Tools: AWS, Node.js, React, React Native, NPM, Flask, SSH
Frameworks & Libraries: TensorFlow/Keras, PyTorch, Scikit-learn, Pandas, NumPy, Matplotlib