Ryan Liu

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EDUCATION

Northwestern University   **June 2026**
Bachelor of Science in Computer Science and Mathematics   *Evanston, IL*

- **GPA:** 4.00/4.00
- **Relevant Coursework:** Machine Learning, Data Structures and Algorithms, Design and Analysis of Algorithms, Intro to C/C++, Intro to Computer Systems, Operating Systems, Scalable Software Architectures, Computer System Security, Discrete Math, Linear Algebra, Probability and Statistics, Multivariable Calculus, Real Analysis
- **Activities and Societies:** ICPC Team Contestant, Undergraduate Teaching Assistant

EXPERIENCE

Full-Stack Software Engineer   **June 2024 – Present**
Juxta Technologies   *Chicago, IL*

- Pioneered analytics-driven logistics optimization solutions at a growth-stage health-tech startup focused on hospital efficiency, contributing as the fifth engineer of a team valued at $6 million and backed by $600,000 in venture funding
- Architected and deployed a robust suite of advanced analytics using Python, JavaScript, and Firebase, achieving a 44% improvement in patient transporter efficiency and reducing hospital transport times by 7.6 minutes per trip
- Led the design and implementation of algorithms for intelligent routing and task assignment, minimizing transporter idle time and streamlining workflows across high-traffic areas and peak hours, ultimately driving down operational costs

Research Assistant   **January 2024 – Present**
Northwestern AI and Security Lab   *Chicago, IL*

- Designed and built robust data pipelines to gather Cybersecurity Vulnerability and Exposure (CVE) information from various forums and databases, leveraging APIs, web scraping, and data integration techniques
- Applied statistical methods and machine learning techniques to engineer features capable of predicting critical metrics, such as the time until exploitation after a vulnerability is disclosed and an estimated severity score
- Developed the NCEWS (Northwestern Cybersecurity Early Warning System) app, using Next.js and data processing libraries like NumPy and Matplotlib to generate insightful visuals, and summarize trends and risks related to CVE

Information Technology Intern   **October 2023 – August 2024**
International Center for Advanced Internet Research   *Chicago, IL*

- Conducted research on applying machine learning models to analyze system information and optimize configurations for high-performance distributed Data Transfer Nodes (DTNs) utilizing NVMe over Fabrics (NVMeoF) technology
- Designed and implemented a JupyterHub-based controller to detect Distributed Denial-of-Service (DDoS) attacks in real time using Sketch-based Entropy Estimation, using Matplotlib for visualizations and NumPy for computations
- Built and deployed Python and Bash scripts to analyze network traffic in real time, collecting data on packet flows and traffic volume to identify anomalies; applied probabilistic models to estimate the likelihood of ongoing DDoS attacks

Undergraduate Teaching Assistant   **September 2024 – Present**
Northwestern University   *Chicago, IL*

- Facilitated weekly office hours to support a class of over 100 students each week in mastering discrete math concepts
- Recognized by students for exceptional teaching and approachability, noted as a favorite undergraduate TA by peers

AWARDS

ICPC North America Championship Qualifier *ACM-International Collegiate Programming Competition*	2024
ICPC Mid-Central USA Silver Medalist *ACM-International Collegiate Programming Competition*	2024
Meta Hacker Cup Round 2 Qualifier *Meta Coding Competitions*	2021, 2023, 2024
American Invitational Mathematics Exam (top 800 of 300,000) *Math Association of America*	2022, 2023
USA Computing Olympiad Gold Division *USA Computing Olympiad*	2022

SKILLS

Programming Languages and Tools: Python, C++, C, Java, JavaScript, TypeScript, SQL, MATLAB, CSS, HTML5, Bash, ZSH, fish, R, AT&T x86 Assembly, Racket, PLAI, Jupyter, JupyterHub, NVMe Command Line Interface
Frameworks/Libraries: React, React Native, Next.js, Node.js, Numpy, Matplotlib, PyTorch