

Ryan Liu

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EDUCATION

Northwestern University

B.S. Computer Science and Mathematics | GPA: 3.8/4.00

Relevant Coursework: Machine Learning, Operating Systems, Data Structures, Algorithms, Databases, Computation Theory

Expected Graduation: June 2027

Evanston, IL

AWARDS

ICPC North America Championship Honorable Mention ACM-ICPC

2025

USACO Platinum USA Computing Olympiad

2025

American Invitational Mathematics Exam (Top 0.27% of 300,000) Mathematical Association of America

2022, 2023

EXPERIENCE

Amazon

June 2025 – Sep 2025

Software Development Engineer Intern

Seattle, WA

- Designed and deployed 80 site-level call-quality alarms in CloudWatch, enabling detection of poor voice performance across global customer support centers, configured SNS notifications and Lambda-powered auto-remediation workflows
- Architecting an audio-quality scoring system, defining metrics and alert thresholds to track call latency and packet loss

Northwestern University

September 2024 – June 2025

Guest Lecturer, Undergraduate Teaching Assistant - Discrete Math

Chicago, IL

- Independently wrote and delivered the Winter 2025 guest lecture in COMP_SCI 212 (Intro to Discrete Math), lecturing 107 students on theorems and results in elementary number theory, accompanying algorithms, and their applications in encryption
- One of 2 undergraduates to write and set problems on homework and exam in the recent history of the course
- Held weekly office hours to 200+ students across 2 classes, cited as a favorite by some students

Juxta Technologies (YC S25)

June 2024 – Feb 2025

Founding Software Engineer

Chicago, IL

- Led the development of analytics-driven logistics tools for a \$6M health-tech startup backed by \$600K from Y Combinator, Lynett Capital, Velocity Catalyst, and Authentic Ventures, improving hospital efficiency and reducing operational costs
- Developed algorithms to minimize idle time, optimize task assignment, and streamline workflows using Python, JavaScript, and Firebase, boosting patient transporter efficiency by 44% and reducing transport times by 7.6 minutes per trip

Northwestern AI and Security Lab

January 2024 – Present

Undergraduate Researcher

Chicago, IL

- Applied machine learning to predict time-to-exploitation and severity of Cybersecurity Vulnerabilities and Exposures
- Built CVE data pipelines from diverse datasets, leveraging APIs, web scraping, and data integration techniques
- Developed Northwestern Cybersecurity Early Warning System with Next.js and React to visualize CVE trends and risks

International Center for Advanced Internet Research

October 2023 – August 2024

Information Technology Intern

Chicago, IL

- Used machine learning to optimize Data Transfer Nodes (DTNs) with NVMeoF, achieving 400GB/s throughput
- Implemented a JupyterHub-based controller to detect DDoS attacks in real time using Sketch-based Entropy Estimation
- Deployed Python and Bash scripts to monitor network traffic, identify anomalies, and estimate the likelihood of attacks

PROJECTS

Offline Judge | Personal Project | [github](#) | 15 hours

HTTP Requests, Webscraping, C++, Python

- Developed an offline judge for olympiad problems, with test case scraping and runtime/memory limit enforcement.
- Designed an system using g++, subprocess, and ulimit, ensuring accurate performance benchmarking.

Customer Churn Prediction | Personal project | [github](#) | 15 hours

Python, Machine Learning, Data Processing

- Developed and deployed ML models, achieving 96% accuracy and 97% F1 score for churn prediction
- Conducted data analysis to identify key churn indicators like income levels and card preferences for actionable insights

SKILLS

Programming Languages: Python, C++, JavaScript, TypeScript, Java, SQL, MATLAB, R

Softwares and Tools: Git, Bash, React, React Native, Next.js, Node.js, HTML, CSS, NumPy, scikit-learn, OpenCV, REST APIs, GraphQL, Google Cloud Platform, AWS, Jupyter, PostgreSQL, MongoDB, Docker, CI/CD pipelines