Ryan Liu

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Education

Northwestern University **Expected Graduation: June 2027**
B.S. Computer Science and Mathematics | GPA: 3.8/4.00 Evanston, IL
Relevant Coursework: Machine Learning, Operating Systems, Data Structures, Algorithms, Databases, Computation Theory

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

- Delivered a full 50-minute lecture to 107 students on theorems in number theory and connections to encryption
- One of 2 undergraduates to set problems in the recent history of the course; Held weekly office hours to 200+ 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