

Alex Liu

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EDUCATION

Purdue University

May 2026

Bachelor of Science in Computer Science

GPA: 3.7

- Relevant Coursework: Data Structures and Algorithms, Artificial Intelligence, Systems Programming, Analysis of Algorithms, Computer Architecture, Programming in C, Discrete Mathematics, Object-Oriented Programming

EXPERIENCE

Roblox

May 2025 - Aug 2025

Software Engineering Intern

San Mateo, CA

- Incoming Software Engineering Intern for Summer 2025 on the Infrastructure team.

GE Transportation, a Wabtec Company

May 2024 - Aug 2024

Software Engineering Intern

Erie, PA

- Engineered MVP development of a management system to collect and transmit event recorded data to customers.
- Deployed an advanced diagnostic tool to automate SSH connections to onboard OSs of over 2000 locomotives daily, enabling real-time confirmation and retrieval of cellular connection statuses to enhance operational efficiency.
- Designed and implemented an automation tool in Python for daily data collection from onboard edge devices via SFTP, significantly improving data retrieval efficiency and accuracy.
- Reduced execution runtime by 97% through integration of data transfers to cloud-based servers, streamlining operations and completely replacing manual retrieval.

Nationwide

Jan 2024 - May 2024

Data Science Intern

West Lafayette, IN

- Constructed the Pricing Impact Estimator (PIE) through a suite of predictive models, aimed at optimizing car insurance pricing strategies from proposed premium and reducing errors in rate estimation.
- Utilized advanced regression models for robust predictions, validated with MSE and Cross-Validation techniques, demonstrating 97.8% stability in premium rates across 13 quarters of empirical data.
- Developed quote-to-policy data processing workflows with Polars, integrated using historical data analysis.
- Leveraged AWS tools including S3 and EC2 to enhance data storage and computational scalability.

Purdue University

Aug 2024 - Present

Teaching Assistant - CS 19300

West Lafayette, IN

- Designed a comprehensive course curriculum and lecture materials instrumental in teaching over 900 students.
- Managed and conducted weekly office hours for 40 students providing personalized guidance and support.

PROJECTS

Nighttime Semantic Segmentation | *Python, Data Augmentation, Domain Adaptation*

- Constructed an instance-level data augmentation method for semantic segmentation, improving nighttime pedestrian recognition by 4.52%, outperforming state-of-the-art benchmarks.
- Implemented an image processing workflow that scanned, extracted, and augmented over 2,400 nighttime images.
- Trained and validated a domain adaptation deep learning model on augmented dataset, achieving consistent recognition improvements over 10,000 training iterations.
- Published and presented at the International Conference for Machine Learning and Soft Computing (ICMLSC).

Purdue Mosaic | *React, Socket.IO, Node.js, Express, Redis, Render*

- Pioneered a responsive collaborative pixel art whiteboard supporting 100+ simultaneous users while maintaining latency under 80ms by utilizing Socket.IO for seamless server-client synchronization.
- Engineered Redis-based buffering system to broadcast updates in batches, optimizing performance in high-traffic.

TECHNICAL SKILLS

Languages: Python, Java, C/C++, JavaScript, SQL, HTML, CSS, R, Godot

Frameworks/Libraries: React, Node.js, Express, MongoDB, Flask, NumPy, Pandas, Polars, PyTorch, Jest

Tools: AWS, Git, Docker, Redis, Vercel