Jessica Liu

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Education

Georgia Institute of Technology Aug. 2023 – May 2027
B.S. in Computer Science *GPA: 4.00/4.00*
B.S. in Mathematics

Relevant Coursework
- *Computer Science:* Data Structures & Algorithms, Design & Analysis of Algorithms, Object-Oriented Design & Analysis, Computer Systems & Architecture, Computer Networking, Artificial Intelligence
- *Mathematics:* Linear Algebra, Combinatorics, Graph Theory, Probability Theory, Abstract Algebra

Experience

Software Engineering Intern May 2025 – Aug. 2025
Niantic Spatial, Inc. | *Software Development Kit Team* *Bellevue, WA*
- Developed a visual positioning algorithm using Wi-Fi fingerprinting, Wi-Fi topology analysis, and computer vision to improve localization to large contiguous area maps for geospatial mapping and augmented reality applications.
- Created an agentic AI application using Model Context Protocol to orchestrate augmented reality and geospatial tools to recommend real estate properties and answer detailed spatial queries about locations and interiors.

Undergraduate Researcher Aug. 2025 – Present
Georgia Institute of Technology | *College of Computing* *Atlanta, GA*
- Optimize sparse tensor computations for high-performance computing by building a run-time interpreter to reshape high-dimensional inputs and utilize fusion opportunities to transform tensor algebra expressions into compositions of a finite set of precomputed kernels.

Teaching Assistant Jan. 2024 – Present
Georgia Institute of Technology | *College of Computing* *Atlanta, GA*
- **CS 3510 Design & Analysis of Algorithms** (Fall 2025 – Present): Teach advanced topics in algorithms (graph algorithms, dynamic programming, complexity theory); design original problems for homework assignments.
- **CS 2110 Computer Organization & Programming** (Spring 2025): Led weekly labs to teach fundamental concepts in computer architecture & hardware, assembly programming, C programming, and memory management.
- **CS 1331 Object-Oriented Programming** (Spring 2024 – Fall 2024 | Recitation Lead): Developed original teaching strategies, materials, and exercises for continued use in future semesters by 30+ TAs across 12 recitation sections attended by 800+ students; taught weekly recitations; hosted 8+ office hours per week.

Software Engineering Intern May 2022 – Aug. 2022
Alpha Models, Inc. *Alpharetta, GA*
- Developed an algorithmic C++ approach to the Traveling Salesman Problem to plan freight railroad maintenance; implemented Java simulations to model railroad yard operations and optimize carrier labor and fuel expenses.

Projects

Breadboard Analyzer | *Python, OpenCV, Flask, React*
- Built a web application to streamline debugging electronic circuit prototypes by generating schematic diagrams from photos of breadboards, using OpenCV image processing techniques for contour, grid, and edge detection to identify electronic components, including wires and integrated circuits.
- Developed a custom graph data structure to model circuits from computer vision data, and designed a modified depth-first search algorithm to convert data into Boolean logic expressions.

Leadership & Community Involvement

Machine Shop Lead Instructor Aug. 2025 – Present
The Hive Interdisciplinary Makerspace – Georgia Institute of Technology *Atlanta, GA*
- Supervise and improve safety and efficiency of machine shop; train instructors and end users on wood- & metal-working machinery; design instructional materials and project blueprints; lead workshops to develop wood-working skills.

Technical Skills

Languages: Java, C, C++, Python, C#, SQL, Assembly, Julia, JavaScript, TypeScript, HTML/CSS
Tools: Git, Unity, MySQL, Firebase, MATLAB, Mathematica, Tableau, LaTeX, Android Studio, Docker, Linux, Bash, GDB Debugger, CMake, Bazel, Jupyter Notebook
Libraries: Pandas, NumPy, Matplotlib, PyTorch, TensorFlow, OpenCV, Flask, MCP, JUnit