# Joy Liu

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## EDUCATION

**University of Pennsylvania, School of Engineering & Applied Science**, Philadelphia, PA *May 2025*

Candidate for Bachelor of Science of Engineering

*Major*: Computer Science, minor in Mathematics

*GPA*: 3.87/4.00, Dean's List

*Relevant Coursework*:

- Completed technical courses in computer systems, data structures & algorithms, discrete math, linear algebra/differential equations, multivariable calculus, and linguistics alongside business courses in negotiations, management, and technology entrepreneurship from the Wharton School.
- Currently enrolled in courses on computer operating systems, automata and complexity, big data analytics, statistical inference, and corporate finance (Fall 2023).

*Activities:* teaching assistant for data structures/algorithms (CIS 121), board & dev team member of Penn Computer Science Society.

**Monta Vista High School**, Cupertino, CA *June 2022*

*GPA:* 3.97/4.00 unweighted, 4.48 weighted *SAT Scores*: Math (800) / Reading & Writing (780)

Received full score (5s) in thirteen AP courses taken, including Calculus BC, CS A, Physics C (Mechanics & E/M), Statistics, and Chemistry. National Merit Finalist in CA. Served as TA for AP-level science courses (including teaching, tutoring, grading, and test-writing experience). VP of school competitive business club (DECA, 300+ members) – spearheaded new curriculum leading to top club placements statewide + internationally. Founder of student-run marketing consulting group helping other students provide COVID relief to local businesses.

## TECHNICAL SKILLS

Proficient in **Java, C++, Python** (including relevant libraries), **Git/Arcanist/Phabricator**. Experienced with other tools, including OCaml (functional programming), C, SQL, Swift, web development workflows. Fluent in Chinese.

## EXPERIENCE

**University of Pennsylvania** | *Teaching Assistant,* ***Data Structures and Algorithms***, Philadelphia, PA *August 2023 – Present*

- Responsible for recitation small group (~20 students), involving mandatory weekly lecture-style discussions and facilitated problem solving. Hold role as the point person on these students' performance & development through the course.
- Staff popular weekly office-hours sessions to address student questions 1:1.
- Write and create novel questions for weekly algorithmic problem sets as member of homework committee.

**WeRide Corp.** | *Software Engineering Intern (Perception)*, San Jose, CA *May – August 2023*

Working on object understanding to detect & identify small obstacles at global autonomous driving startup (L3/L4).

- Ideated and developed new crushability and label coverage metrics — primary point person on newly developed benchmarking and benchmark calculation system critical to testing new feature launch.
- Expanded existing metric systems to work with new multiclass small obstacle identification model for August 2023 launch.
- Uncovered and addressed bugs with undocumented legacy system: restructured code to ensure compatibility with modern workflow setup, data collection, and simulation tools used by majority of 700+ employee company.
- Analyzed significant portion of department codebase to document "quick start guides" for large & rapidly expanding perception department, ensuring faster onboarding — recommended reading for all new department members worldwide.

**University of California, Santa Cruz** | *Machine Learning Research Intern*, Santa Cruz, CA *May – August 2019*

Member of SpokeIt project developing automated mobile speech-therapy tool for children with cleft palate (birth defect)

- Used Python with libraries (sklearn, TensorFlow, NumPy/pandas/standard data analysis packages) and AWS to train ML model for speech (phoneme) segmentation as part of automated speech therapy project for children with cleft palate.
- Analyzed tens of thousands of audio recordings in different languages, accents, speech patterns working with partner NGO SmileTrain.
- Proposed and implemented new and more effective solution to train machine-learning model using spectral waveform analysis and Python package librosa rather than direct audio analysis for data cleaning and speaker segmentation.