Natsume Wu

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EDUCATION

Yale University, New Haven, CT — Aug. 2022 – May 2026

- *BS in Computer Science, Chemistry, GPA:* 3.99/4.00
- *Relevant Coursework:* Parallel Programming, Machine Learning, Algorithms, Systems and Computer Organization, Data Structures, Software Engineering, Introduction to Quantum Computing
- *Awards:* Rosenfeld Science Scholar (Top 10% of Yale Student Researchers), Arthur Fleischer Fellowship
- *Languages:* English (native), Japanese (business)

TECHNICAL SKILLS

- *Programming Languages:* Python, C/C++, Bash, JavaScript, Typescript, HTML, CSS
- *Developer Tools:* Git/GitHub, Slurm, React/React Native
- *Libraries & Frameworks:* Pandas, NumPy, MPI4Py, OpenMP, scikit-learn, PyTorch, RDKit, PySCF, VASP, Node.js

WORK EXPERIENCE & LEADERSHIP ROLES

Yideshare, *Frontend/Mobile Developer,* New Haven, CT — Sept. 2025 – Present

- Startup connecting college students to save money on common rideshare. Worked on front-end mobile app development and UI. Deployed with 25+ users in pilot.

Zhu Group, *Research Intern,* New Haven, CT — April 2024 – Present

- Developing theoretical models and open-source software for modeling quantum many-body phenomena, combining ab initio methods with machine learning to achieve high accuracy at low computational cost.
- Built and optimized distributed backend pipelines, improving system throughput by 40% on HPC infrastructure.

Yale Department of Chemistry, *Peer Tutor and Peer Mentor*, New Haven, CT — Jan. 2025 – Present

- Host weekly tutoring sessions for ~45 students in Physical Chemistry II. Organize department-wide lectures.

Yale University Admissions Office, *Senior STEM Tour Guide*, New Haven, CT — Feb. 2023 – Present

- Lead weekly tours and webinars of science and engineering facilities to 30-50 prospective students and their families.
- Interview candidates for new tour guides and lead training of newly hired guides.

Yale Japanese American Students Union, *Secretary*, New Haven, CT — Oct. 2022 – Present

- Lead outreach strategy and write weekly newsletter to 500+ people. Plan and promote events to 100+ people.

RESEARCH

Investigation of Point Defect Centers via ppRPA | *Python, Slurm, VASP, Pandas, PySCF, Linux* — April 2024 – Present

- Implemented code for the particle-particle random phase approximation (ppRPA) to analyze molecular systems and to analyze strain and electric-field Stark shifts in point defect centers.
- Designed scalable job scheduling and execution pipeline with MPI4Py, boosting backend compute efficiency by 40%.
- Implemented automated testing framework to improve system reliability and error handling across hundreds of jobs.

Prediction of Experimental Properties via VAE | *Python, PySCF, NumPy* — July 2025 – Present

- Manually analyzed 8000+ molecule dataset and performed density functional theory calculations to train a VAE to predict experimental properties such as dipole moment and excitation energy.

Hypergraph Neural Network (HGNN) Parallelization | *Theory Project* — April 2025 – Present

- Developed novel synchronous algorithm for computing HGNN layers and conducted work-span analysis.

PROJECTS

Predicting Stock Market Returns via Reddit Sentiment | *Python, scikit-learn, NLVK* — April 2025 – May 2025

- Developed python framework to analyze sentiment of 30,000+ Reddit posts and predict stock market returns.
- Tested TF-IDF and SBERT vectorization with logistic regression and feed-forward neural networks.

Yorkie | *Node.js, REST, PostgreSQL, React, Typescript* — Aug. 2025 – Present

- Developing web app to connect students wanting to sublet and/or find roommates