Alec C. Zhu

Operations Research and Financial Engineering, Princeton University
alecczhu@gmail.com apc1234567.github.io

Education

Ph.D., Operations Research and Financial Engineering, Princeton University 2025–present

B.S., Mathematics with Computer Science, Massachusetts Institute of Technology 2021–2025
GPA: 5.0/5.0

Publications

Faster parametric submodular function minimization 2026
*S. Gupta, **A. C. Zhu**. Preprint; major revision in progress.*

Stereoretentive and regioselective selenium-catalyzed intermolecular propargylic C–H amination of alkynes 2022
*T. P. Maloney, A. F. Dohoda, **A. C. Zhu**, F. E. Michael. Chemical Science 13, 2121–2127.*

Teaching

Teaching Assistant, ORF 307: Optimization, Princeton University Fall 2026

Honors and Awards

International Chemistry Olympiad, Gold Medal 2020
One of four members of the US National Team; ranked 8 of 231.

Regeneron Science Talent Search, Top 300 2021

Research Experience

Coley Group, MIT June–Aug. 2023, Apr.–July 2024
Undergraduate Researcher

- Studied small-molecule catalysis and protein turbidity with random heteropolymers using high-throughput techniques.
- Designed automated experiments on a Tecan Freedom EVO platform; developed machine learning models for polymer data, including permutation-invariant models such as Deep Sets.

Wendlandt Group, MIT Sept. 2021–May 2022
Undergraduate Researcher

- Developed methods for selective modification of carbohydrates using photoredox catalysis.

Michael Group, University of Washington June 2020–Apr. 2021
Research Science Institute (RSI) Scholar

– Investigated the stereochemistry and regiochemistry of selenium-catalyzed allylic and propargylic amination with computational methods; wrote Bash scripts to run Gaussian on a remote supercomputer.

Other Experience

Elevian June–Aug. 2022
Protein Biochemistry Intern

– Chromatographic methods for protein analysis and purification with HPLC and FPLC: size exclusion, reverse phase, ion exchange, and hydrophobic interaction chromatography.

American Chemical Society USNCO Training Camp June 2022
Olympiad Camp Mentor

– Prepared lectures and exam material to train the US team for the International Chemistry Olympiad.

V-Systems May–Aug. 2021
Software Intern

– Added ranking and data-tracking features to a Python app for playing Go; worked with OSC networking via oscpy.

Coursework

Graduate: Random Matrix Theory, Inference and Information, Algorithms for Inference, High-Dimensional Statistics, Deep Learning, Symmetry and Machine Learning, Optimization Methods.

Mathematics and computer science: Abstract Algebra I & II, Real Analysis, Complex Analysis, Differential Equations, Discrete Mathematics, Statistics for Applications, Design and Analysis of Algorithms, Theory of Computation, Seminar in Theoretical Computer Science.

Chemistry and physics: Statistical Mechanics, Quantum Mechanics, Thermodynamics and Kinetics, Fundamentals of Spectroscopy.

Skills

Programming: Python, Julia, Bash, Gaussian.

Laboratory: air-free technique, flash column chromatography, HPLC, FPLC, NMR, IR, UV-Vis, gel electrophoresis, western blotting.