Charles Yu

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Education

Princeton University *Grad May 2026*

A.B. Mathematics - GPA: 3.7

Coursework: *Measure Theory/Real Analysis, Algebraic Number Theory, Economics in Computing, Abstract Algebra, Combinatorics, Probability and Stochastic Systems, Algorithms and Data Structures, Honors Linear Algebra, Programming Systems*

Activities: *BAC Dance Company Member, Whitman College Council, Princeton Quant Club, Math Club Member, Business Today Operations Member, Game Theory Directed Reading Program*

Work Experience

Princeton Math Dept, Student Researcher *Mar 2024 - Aug 2024*

- Conduct mathematical research in number theory under Dr. Andrew O' Desky, optimizing an analog of the Gauss Circle Problem in quadratic and cubic fields
- Research draws from complex and fourier analysis, and other adjacent math fields, and computations are checked with Sagemath and PARI/GP
- Research is supported by Jane H. Lukens '30 Scholarship fund

Telethon Kids Institute, Research Intern *Jun 2023 - Aug 2023*

- Researched relative contributions of environmental and socioeconomic factors on asthma in Australia children utilizing geospatial methods, and quantitative/statistical analysis
- Utilized R, C++, and Google Earth Engine (GIS) to obtain data and execute algorithms to determine weighting
- Worked under Professor Ewan Cameron; published in Journal of Allergy and Clinical Immunology (JACI)

Princeton Math/Computer Science Depts, Undergraduate Course Assistant *Jun 2023 - Present*

- TA for MAT345 (Abstract Algebra; Fall 2024), previous TA for math major pre-requisite courses MAT215 (Single Variable Analysis; Fall 2023) and MAT217 (Honors Linear Algebra; Spring 2024)
- Held problem sessions three times a week for 50+ students and hosted review sessions for exams
- Graded for COS217 (Intro to Programming Systems; Fall 2023 - Spring 2024). Offered extensive feedback and comments on students' style and coding beyond accuracy

Leadership Experience

Princeton Science Olympiad Tournament, Treasurer *Oct 2022 - Present*

- Directed general financial affairs for tournament that attracts 800+ high schoolers in NJ area, including: managing team budget of over $15000; ordering trophies, shirts, and event materials across chemistry, physics, and building events
- Secured around $20000 worth of sponsorship money/prizes for the 2022-23 tournament and the 2023-24 tournament
- Updated website with relevant announcements, programmed registration, managed scoring algorithms

Projects

Bundle, Frontend Engineer and Designer *Nov 2022*

- Built a social webapp to encourage more meaningful relationships over the internet and address mental health struggles
- Developed webcam scripts and styled website; built on Node.js and utilized Flask for backend
- Winner of Best UI/UX design, $1000 grant from 1517 fund, and $250 grant from Verbwire at HackPrinceton (Devpost)

Publications

- Cameron, E., Mo, J., **Yu, C**. A Health Inequality Analysis of Childhood Asthma Prevalence in Urban Australia, Journal of Allergy and Clinical Immunology, 2024. DOI: https://doi.org/10.1016/j.jaci.2024.01.023
- Wang, E., **Yu, C**. et al. Defeating the Digital Divide, SIAM Undergraduate Research Online (SUIRO), Vol XIV, 2021. DOI: 10.1137/21S1417922

Honors and Awards

- Princeton Citadel Securities Trading Challenge 2nd Place - Sep 2024
- Putnam Competition Top 500 Scorer - Feb 2024
- Winner of International Mathworks Math Modeling (M3) Challenge - Apr 2021
- Semifinalist and Technical Honorable Mention of M3 Challenge - Apr 2022
- 3x AIME Qualifier of AMC Competitions - 2020-2022

Skills Summary

- Languages: Python, C, R, SQL
- Frameworks/Systems: Sagemath, PARI/GP, Scikit, Numpy, Pandas