Yiran Hu

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EDUCATION

University of California, Berkeley, Berkeley, CA (Expected) 2029
B.A. in Mathematics, GPA 4.0

Saint Mark's School, Southborough, MA 2025

RESEARCH

Stanford Mathematics Camp: Abstract Algebra & Number Theory, Stanford, CA 2024
Using group-theoretic tools, I developed a formal decomposition of CFOP into a chain of subgroups that clarifies why specific move sequences minimize solution length. The project culminated in a 15-page paper, "Mathematical Foundations and Group-Theory Applications in the CFOP Method for Solving the Rubik's Cube," presented to an audience of over 30 faculty and peers, for which I received the camp's top evaluation.

Eureka Program: Machine Learning, Georgia Tech 2023
Over six weeks, I benchmarked GPT-4 and CodeT5+ on 20+ complex programming tasks, revealing how model architecture and task difficulty influence code-generation accuracy. The study, supervised by Dr. Cameron Taylor, led to a 20-page paper and an online video presentation summarizing key performance trends.

Columbia Summer Immersion: Machine Learning & Big Data, Columbia University, NY 2022 - 2023
I used Python/scikit-learn to craft a decision-tree classifier for the Titanic-survival dataset, engineering features such as passenger title, family size, and deck block, then grid-searching depth, split criterion, and pruning thresholds. The refinements raised cross-validated accuracy from ~70 % to 84 %. I then presented the work to 20 + peers and faculty, earning the program's top recommendation.

INTERNSHIPS

TestDaily, Hope Education Institute, Beijing, China 2023 - 2024
Teacher Assistant

- Designed and led weekly 2-hour workshops for 20 middle- and high-schoolers, breaking down algorithms, data structures, and C++ fundamentals with live coding and Q&A.
- Annotated homework submissions, giving line-by-line feedback on correctness, efficiency, and style.

Lightup Algorithm | algorithm-explaining WeChat Account, Guangzhuo, China 2023
Founder & Editor

- Created and ran a Mandarin-language channel demystifying coding algorithms for a general audience.
- Wrote illustrated posts on topics such as quicksort, binary search, and dynamic-programming patterns, pairing annotated C++ snippets with everyday analogies to help non-CS readers grasp the logic behind each method.

EXTRACURRICULARS

Rubik's Cube Club, Southborough, MA 2021 – 2025
Founder

- Taught peers how to solve a Rubik's cube in different algorithms.
- Designed an app for algorithm learning.

St. Mark's Theriot South, Southborough, MA 2023 - 2025
Residential Prefect

- Helped students transition into high school by working with dorm heads.
- Planned cultural events like the Mid-Autumn Festival.

Varsity Tennis Team, Southborough, MA 2023 - 2025
Captain

- Held team-bonding trips and regular off-season practices.
- Aided teammates with playing strategies for singles and doubles.

Varsity Squash Team, Southborough, MA 2022 - 2025
Captain

- Led team to participate in national and state-level tournaments.
- Held regular practice sessions during off-season, reciving the "Effort, Teamwork, Attitude" award and the Coach's award.

AWARDS

Cum Laude Society, St Mark's School 2025
The John Suydam Mathematics Prize, Granter 2025

Platinum Division, USA Computing Olympiads 2024
Qualifier, USA Math Olympiad 2024
Regional Champion, WPI Math Meet 2024
Champion, New England High School Squash Team 2024

SKILLS

Languages: Mandarin (Native), English (Fluent), Spanish (Beginner)
Computer Programming: Python, C++, Java, Jupyter Notebook, LaTeX