

Alan Li

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INTERESTS

AI for math, LLM-driven open-ended mathematical discovery

PUBLICATIONS AND PREPRINTS

1. PWW-Bench: Probing Visual Mathematical Reasoning with Proofs Without Words;

Sabrina Reguyal, Rahul Saha, [Alan Li](#), Atharva Sehgal;
3rd AI for Math Workshop, ICML (2026)

2. The Grothendieck Constant Is Less Than $\pi/(2 \log(1+\sqrt{2})) - 10^{-5}$;

[Alan Li](#), Rahul Saha, Anton Xue, Swarat Chaudhuri, Adam Klivans, Pravesh K. Kothari, Raghu Meka;
arXiv preprint (2026) [arXiv:2606.03991](https://arxiv.org/abs/2606.03991) [cs.DS]

3. The planar Turán number of $\{K_4, C_5\}$ and $\{K_4, C_6\}$;

Ervin Győri, [Alan Li](#), Runtian Zhou;
Graphs and Combinatorics **40**, 99 (2024) <https://doi.org/10.1007/s00373-024-02830-4>

4. The planar Turán number of the seven-cycle;

Ervin Győri, [Alan Li](#), Runtian Zhou;
arXiv preprint (2023) [arXiv:2307.06909](https://arxiv.org/abs/2307.06909) [math.CO]

5. A generalization of Szlam's Lemma;

[Alan Li](#), Amelia Shapiro, Kaylee Weatherspoon;
Geombinatorics 32 (2022), no. 2, 75–82.

RESEARCH EXPERIENCE

Graduate Research Assistant, University of Texas at Austin, Austin, TX

August 2025 - Present

- Supervisor: Swarat Chaudhuri
- Using AI to improve the best known bounds on the Grothendieck constant; see preprint
- Exploring how AI can collaborate with human mathematicians on long-horizon open research problems
- Developing multimodal mathematical reasoning capabilities in AI; see publication

Researcher, Budapest Semesters in Mathematics, Budapest, Hungary

February 2023 – June 2023

- Supervisor: Ervin Győri
- Worked with another undergraduate as part of a competitive research course
- Explored and solved various problems in extremal planar graph theory; see publications

Researcher, The Fields Institute, Toronto, Canada

June 2022 – August 2022

- Supervisors: Jérémie Lefebvre and Afroditi Talidou

- One of 32 students selected internationally to participate in the 2022 Fields Undergraduate Summer Research Program
- Collaborated with other students to experiment with and build upon a mathematical model of the propagation of action potentials in neurons using MATLAB, ultimately aiming to understand the effect of myelination on memory formation

REU in Algebra and Discrete Mathematics, Auburn University, Auburn, AL June 2021 – August 2021

- Supervisor: Peter Johnson
- One of 2 sophomores (and 10 participants chosen out of 300 candidates) in this NSF funded program
- Formulated and addressed open problems in Euclidean Ramsey theory and graph theory; see publication
- Research presented at the 2021 Annual Conference of the Southern Africa Mathematical Sciences Association (SAMSA) and the Joint Mathematics Meetings (JMM) 2022 Undergraduate Student Poster Session

Math Research Intern, Amherst College, Amherst, MA November 2020 – May 2021

- Mentor: Ivan Contreras
- Collaborated with 3 team members in a research project on Graph Quantum Mechanics
- Analyzed solutions of the graph theoretical version of the Schrodinger equation using spectral graph theory; studied numerical approximations and visualizations using NetworkX (Python)

WORK EXPERIENCE

Quantitative Trader, Susquehanna International Group, Philadelphia, PA August 2024 – April 2025

- Traded US Treasury options
- Learned about statistics, options theory, decision science, and strategic games, and applied this to trading

Quant Trading Intern, Susquehanna International Group, Philadelphia, PA June 2023 – August 2023

EDUCATION

University of Texas at Austin, Austin, TX | *PhD in Computer Science* August 2025 – Present

- Advisor: Swarat Chaudhuri
- Current Research: AI for math, LLM-driven open-ended mathematical discovery
- Coursework: Generative Models, Grounded NLP, Cryptography

Amherst College, Amherst, MA | *Bachelor of Arts* August 2020 – May 2024

- Honors: Summa cum laude with distinction (highest honor)
- Major: Mathematics
- GPA: 4.0/4.0
- Relevant Upper-Level Coursework:
Math Honors Thesis (Ramsey Theory), Elliptic Curves, Graduate Algebra II, Graduate Algebra I, Topology, Measure Theory, Rigidity Theory, Quantum Information Theory, Real Analysis, Undergraduate Algebra, Stochastic Processes, Game Theory and Applications, Randomized Algorithms, Machine Learning, Algorithms, Artificial Intelligence, Data Structures

Budapest Semesters In Mathematics, Budapest, Hungary February 2023 – May 2023

- GPA: 4.0/4.0

- Relevant Upper-Level Coursework (Course, grade, textbook, instructor):
Algebraic Topology, Complex Analysis, Groups and Graph Limits

AWARDS AND HONORS

The Robert H. Breusch Prize (Mathematics) (2024): best honors thesis in mathematics and statistics

Putnam Competition (2023, 2022, 2021): Scored 41/120, 37/120, and 18/120, placed Top 200, Top 200, and Top 500 respectively

International Mathematical Olympiad (2019): Represented New Zealand and scored 13/42; placed 361st out of 621 contestants in the world

LEADERSHIP EXPERIENCE

Amherst College Math Club, Amherst, MA | *President*

August 2021 – May 2023

- Managed, recruited, and ran meetings for 100+ member organization; coordinated with E-board to obtain funding, set up various meetings and events, managed communications, and built a strong mathematical community at Amherst College