Glenn Sun

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Education

Sep. 2019 – Jun. 2023 **B.S./M.A. Mathematics (combined)**, *University of California, Los Angeles*.
Current GPA: 3.852. Simultaneous M.A. part of Departmental Scholars Program.

Research Experience

Jun. 2022 – Aug. 2022 **NYC Discrete Math REU**, *Baruch College*.
- Mentor: Guy Moshkovitz
- The Nullstellensatz gives a method to refute the existence of solutions to a system of polynomials. In finite fields $\mathbb{F}_q$, we investigated lower bounds for the complexity of this refutation. This extends on a known tight lower bound for $\mathbb{F}_2$.
- Used computational tools like SageMath to generate examples and test conjectures

May 2021 – Aug. 2021 **DIMACS REU**, *Rutgers University*.
S. Assadi, A. Chen, and G. Sun, **Deterministic Graph Coloring in the Streaming Model**, *STOC 2022*. arXiv:2109.14891
- Mentor: Sepehr Assadi
- In the semi-streaming model of computation, graphs have $O(n^2)$ edges, but we can only store $O(n \operatorname{polylog} n)$ bits of data. Let Δ be the maximum degree of a graph. It is known that in this model, a $(\Delta+1)$ vertex coloring can be found with randomization. We prove that in sharp contrast, no sub-exponential in Δ coloring can be found deterministically. In the paper, we collaborate with previous REU student Andrew Chen to include his results which give $\operatorname{poly}(\Delta)$ colorings when allowed to view the stream multiple times.
- Presented at STOC 2022 conference

Jun. 2020 – Sept. 2020 **Individual REU**, *Northwestern University*.
P. Kayongo, G. Sun, J. Hartline, and J. Hullman, **Visualization Equilibrium**, *IEEE TVCG* 28 (2022), 465–474. arXiv:2108.04953
- Mentor: Jessica Hullman
- When playing (game-theoretic) games repeatedly, human behavior tends to converge to an empirical equilibrium. We studied how this equilibrium is affected by the style of visualization used to communicate the data, and consequently how to increase average payoffs at equilibrium through better visualizations.
- Used R simulations to help form research questions and analyze data

Teaching Experience

Oct. 2020 – Present **Lead Instructor**, *UCLA Olga Radko Endowed Math Circle*.
- The Math Circle focuses on showcasing the beauty of mathematics and improving problem solving skills to K-12 students, going beyond standard school curricula.
- Teach a class of 20 high school students once per week on Sundays
- Create handouts and exercises on topics such as P vs. NP, Axiom of Choice, Mandelbrot set, dynamical systems, graph theory, juggling, etc.
- Collaborate with other lead instructors to decide topics and revise handouts
- Coordinate teaching assistants and incorporate their feedback into handouts

Oct. 2019 – Oct. 2020 **Teaching Assistant**, *UCLA Olga Radko Endowed Math Circle*.
- Assisted a group of 5 high school students by providing hints and explaining key concepts
- Provided feedback on weekly handouts written by lead instructors

Oct. 2020 – Mar. 2021 **Grader**, *UCLA Department of Mathematics*.
- Graded weekly quizzes or homework for proof-based linear algebra classes of 40 students
- Provided students with detailed individualized feedback

Jun. 2020 – Jul. 2020 **Teaching Assistant**, *AwesomeMath Summer Program*.
- TA'ed for AIME/USAMO-prep classes of 25 students in Algebra and Number Theory
- Ran review sessions, provided office hours, graded exams, and scribed lecture notes

Jun. 2018 – Jul. 2018 **Teaching Assistant**, *Program for Algorithmic and Combinatorial Thinking*.
- TA'ed for a section of 9 high school students in proofs and discrete math
- Graded exams and daily homework, wrote exam questions in collaboration with other TAs
- Tutored some students individually and witnessed improved exam scores as a result

Other

Dec. 2019 **Putnam Competition**, 30 points, rank 276.