Kyra Gunluk

Contact

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Education

Georgia Institute of Technology *Atlanta, GA*
PhD in Algorithms, Combinatorics, and Optimization *Fall 2024-Spring 2029 (Expected)*
Advised by Professor Santosh Vempala, based in College of Computing

Cornell University *Ithaca, NY*
B.S. in Computer Science, Magna Cum Laude *Fall 2020-Spring 2024*
Minors in Operations Research, Mathematics, and Game Design
GPA: 3.77 Dean's list: Fall 2021, Spring 2022, Fall 2022, Spring 2023, Fall 2024, Spring 2024

Research Experience

Graduate Research Assistant Georgia Institute of Technology *Fall 2024 - Current*
Research project on FPAS for Convex Body Volume Computation with Professor Santosh Vempala. The goal of this project is to design a poly-time determinisitc algorithm that finds an epsilon approximation of the volume of a polytope using methods related to approximately counting knapsack solutions.

NSF DREU Research Intern UIUC, Champaign, IL *Summer 2023*
Selected as an on site participant for 10 weeks in Urbana-Champaign, working with Professor Ruta Mehta. Conducted research on Algorithmic Game Theory, and developed approximation algorithms for fair allocation of indivisible items among agents.

Undergraduate Research at Cornell Cornell University, Ithaca, NY *Fall 2022, Spring 2023*
Worked on a research project on Fourier Bounds for Parity Decision Trees (PTDs) with Professor Eshan Chattopadhyay. The goal of this project is to improve current bounds on the complexity of Fourier expansions of boolean functions on binary strings.

Written Work

Approximating MMS and (symmetric) APS under Cardinality Constraints: Goods, Bads, and the Best-of-Both-Worlds
Arjun Aggarwal, Kyra Gunluk, Ruta Mehta

Academic Poster Presentations

MMS and APS Under Heterogeneous Cardinality Constraints
– Workshop in Honor of Mihalis Yannakakis, Columbia University *August 2023*
– EaGL Theory of Computation Workshop, Univeristy of Rochester *September 2023*

A Deterministic Polynomial-time Approximation Scheme for the Volume of a Hypercube Intersected with Halfspaces
– ACORN 2025, FirezeFest, Carnegie Mellon University *October 2025*

Teaching Experience

Cornell University, Ithaca, NY, CS Course Staff *Spring 2022, Fall 2022*
TA for CS 2800: Discrete Structures. Taught hour long discussion sessions twice a week, graded weekly homeworks and three exams, held office hours.

Cornell University, Ithaca, NY, CS Course Staff *Spring 2023*
Teaching Assistant for CS 4820: Introduction to Analysis of Algorithms. Held hour long office hours to assist students in problem solving, graded all homeworks and exams.

Cornell University, Ithaca, NY, Engineering Learning Initiatives *Fall 2021*
Academic Excellence Workshop Facilitator for Math 2930: Differential Equations for Engineers. Created weekly lesson plans, lecture slides, and worksheets for students; taught weekly 2-hour sessions, during which I presented review slideshows, assisted students and provided full solutions.

Georgia Tech, Atlanta, GA, ISyE mentor *Fall 2025*
Graduate Mentor for CSP (Community Service Project) with ISyE's Center for Academics, Success, and Engagement. Mentoring undergrad teams through applied projects with industry partners

Educational Outreach

EdEquity, Denver, CO, *College-In-High School* (remote) *Fall 2023*
TA for ENGRI 1101: Engineering Applications of ORIE for High School Students. Led coding lab sections twice a week, held office hours, and graded homeworks and exams.

Discovery Program, New York, NY, Stuyvesant HS *Summer 2022*
Teaching Assistant for mathematics, Algebra 1. Provided guidance for problem solving and graded homework assignments and exams.

STAR Learning Center, New York, NY, Tutor *March 2019 – July 2019*
STEM tutor for underprivileged students. Created individual lessons, reported progress afterwards.

Applied Projects

Action IQ Research Internship, New York, NY, Intern *Summer 2019*
Research project on the relationship between weather conditions and shopping trends at various Intermix stores. Worked with a partner using python to create graphs and analyze the data to relate customer shopping patterns to weather data.

Trading Bot, Cornell University, Developer *March 2021 – May 2021*
Worked with a team to create a user interactive database that advises when to invest and trades stocks in Ethereum using OCaml.

Salvage Computer Game, Cornell University, Designer *Spring 2022*
Worked with a team to develop a deep sea diving exploration video game. Character Design of the diver and the monsters, creating animation cycles for different movements using Adobe Photoshop.

Lunar Lasso Mobile Game, Cornell University, Designer *Spring 2023*
Worked with a team to develop a space cowboy obstacle game. Character Design for all game assets, creating animation cycles for different movements using Adobe Photoshop.

Hospitality Hackathon, Cornell University, Researcher *2021*
Worked with a team to form theoretical solutions to current Hilton technology and staffing issues and presented our ideas.

Honors

Member of Study of Exceptional Talent, Johns Hopkins Center for Talented Youth *2015*
Member of Google CSRMP (Computer Science Research Mentorship Program) *2022*
Participant in the New Horizons in Theoretical Computer Science Summer School *2023*

Relevant Skills

Languages: English - Native
Spanish - Intermediate

Programming: Python, Java, C, HTML, OCaml,
MATLAB, OR-Tools, CVXPY, LaTeX

Design: Word, Excel, Adobe Photoshop, Procreate

Professional Memberships

Society of Women Engineers
Women in Computing at Cornell