

Xifan Yu

CONTACT INFORMATION	Email: xifan.yu@yale.edu Homepage: xifanyu.github.io	Tel: (773) 690-2203
RESEARCH INTERESTS	I am broadly interested in theoretical computer science, including graph theory, average-case complexity, spectral methods, Sum-of-Squares algorithms, and high-dimensional statistics. Recently I have become interested in finite free probability, numerical linear algebra, and the theory of language generation.	
EDUCATION	Yale University Ph.D. in Computer Science (expected June 2027)	<i>Sept 2021 - Present</i>
	University of Chicago M.S. in Computer Science (June 2021) B.S. in Computer Science and Mathematics, <i>summa cum laude</i> (June 2021)	<i>Sept 2017 - June 2021</i>
PUBLICATIONS	Stable algorithms lower bounds for estimation from MMSE discontinuities (Extended Abstract). Xifan Yu, Ilias Zadik. <i>Conference on Learning Theory (COLT)</i>, 2026. Differentially private language generation in the limit (Extended Abstract). Anay Mehrotra, Grigoris Veleghas, Xifan Yu, Felix Zhou. <i>Conference on Learning Theory (COLT)</i>, 2026. Also presented at <i>Theory and Practice of Differential Privacy (TPDP)</i>, 2026 and <i>Workshop on Formal Languages and Neural Networks (FLaNN)</i>, 2026. Language generation with infinite contamination. Anay Mehrotra, Grigoris Veleghas, Xifan Yu, Felix Zhou. <i>Conference on Learning Theory (COLT)</i>, 2026. Also presented at <i>Workshop on Formal Languages and Neural Networks (FLaNN)</i>, 2026. Counting stars is constant-degree optimal for detecting any planted subgraph. Xifan Yu, Ilias Zadik, Peiyuan Zhang. <i>Mathematical Statistics and Learning</i>, 2025. Statistical inference of a ranked community in a directed graph. Dmitriy Kunisky, Daniel A. Spielman, Alexander S. Wein, Xifan Yu. <i>ACM Symposium on Theory of Computing (STOC)</i>, 2025. Computational hardness of detecting graph lifts and certifying lift-monotone properties of random regular graphs. Dmitriy Kunisky, Xifan Yu. <i>IEEE Symposium on Foundations of Computer Science (FOCS)</i>, 2024. Counting stars is constant-degree optimal for detecting any planted subgraph (Extended Abstract). Xifan Yu, Ilias Zadik, Peiyuan Zhang. <i>Conference on Learning Theory (COLT)</i>, 2024. A degree 4 sum-of-squares lower bound for the clique number of the Paley graph. Dmitriy Kunisky, Xifan Yu. <i>Computational Complexity Conference (CCC)</i>, 2023.	
PREPRINTS	Inequalities for rank-two permanents and finite free convolutions. Dmitriy Kunisky, Daniel A. Spielman, Xifan Yu. <i>Manuscript</i>, 2026. Analysis of polynomial threshold functions on random regular graphs: computational complexity of detecting noisy random lift. Xifan Yu. <i>In Submission</i>, 2026. Strong refutation of random ordering CSPs. Xifan Yu. <i>In Submission</i>, 2026. Large growth happens: Gaussian elimination with partial pivoting on random matrices. Daniel A. Spielman, Xifan Yu. <i>In Submission</i>, 2026.	
COMMUNITY SERVICES	Conference Reviews <i>ACM-SIAM Symposium on Discrete Algorithms (SODA)</i> , 2027 <i>International Conference on Randomization and Computation (RANDOM)</i> , 2026 <i>International Colloquium on Automata, Languages and Programming (ICALP)</i> , 2026 <i>ACM Conference on Economics and Computation (EC)</i> , 2026 <i>ACM-SIAM Symposium on Discrete Algorithms (SODA)</i> , 2026 <i>Computational Complexity Conference (CCC)</i> , 2025	
	Journal Reviews <i>IEEE Transactions on Information Theory</i> , 2025	
	Event Organizing <i>Yale Theory Student Seminar</i> , 2024-2026 <i>Yale Student Theory Day</i> , 2025	

HONORS AND AWARDS	• Phi Beta Kappa, Inducted <i>University of Chicago</i>	<i>June 2020</i>
	• Student Marshal <i>University of Chicago</i>	<i>June 2020</i>
	• Dean's List <i>University of Chicago</i>	<i>2017-2018, 2018-2019, 2019-2020</i>
	Programming Competition Awards	
	• Top 1000 in Round 2 <i>Google Code Jam 2020</i>	<i>May 2020</i>
	• North America Finalist <i>International Collegiate Programming Contest's inaugural North America Championship</i>	<i>Feb 2020</i>
	• Top 500 in Round 2 <i>Facebook Hacker Cup 2019</i>	<i>July 2019</i>
	• World Finalist <i>43rd Annual World Finals of the International Collegiate Programming Contest</i>	<i>April 2019</i>
TEACHING EXPERIENCE	Yale University, Department of Computer Science	<i>Sept 2022 - May 2023</i>
	<i>Teaching Fellow</i>	<i>New Haven, CT</i>
	• CPSC 365 Algorithms,	Dr. Dylan McKay, Spring 2023
	• CPSC 202 Mathematical Tools for CS,	Dr. Dylan McKay, Fall 2022
	University of Chicago, Department of Computer Science	<i>Oct 2020 - Mar 2021</i>
	<i>Teaching Assistant</i>	<i>Chicago, IL</i>
	• CMSC 27230 Honors Theory of Algorithms,	Prof. László Babai, Winter 2021
	• CMSC 37115 Intro to Mathematical Reasoning,	Prof. László Babai, Fall 2020
	University of Chicago, Department of Computer Science	<i>April 2019 - June 2020</i>
	<i>Grader</i>	<i>Chicago, IL</i>
	• CMSC 27500 Graph Theory,	Prof. Ketan Mulmuley, Spring 2020
	• CMSC 37000 Algorithms,	Prof. Yury Makarychev, Winter 2020
	• CMSC 27530 Honors Graph Theory,	Prof. László Babai, Spring 2019
INDUSTRY EXPERIENCE	Horizon Robotics Inc.	<i>June 2019 - Sept 2019</i>
	<i>Software Engineer Intern</i>	<i>Cupertino, CA</i>