Tim Randolph

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Research Interests

Exact algorithms, fine-grained complexity, graphs, combinatorics, probability.

Education

Columbia University, New York, NY. 2018-Present
PhD in Computer Science Theory.
Advised by Professors Rocco Servedio and Xi Chen.

Columbia University, New York, NY. 2018-2019
MS in Computer Science.

Williams College, Williamstown, MA. 2014-2018
B.A. Computer Science with Highest Honors, Mathematics with Honors, Philosophy. Concentration in Cognitive Science. (Magna Cum Laude.)
Thesis: (k, p)-*Planar Graphs*. Advised by Professor William Lenhart.
GPA: 3.96. GRE: 170vb/170qt

Publications

Xi Chen, Shivam Nadimpalli, Tim Randolph, Rocco Servedio, and Or Zamir. "Testing Sumsets is Hard." Preprint, 2023.

Tim Randolph. "Exact Algorithms for Finding Sumsets." Preprint, 2023.

Tim Randolph. "A Hybrid Algorithm for Subset Sum and Equal Subset Sum." Preprint, 2023.

Xi Chen, Yaonan Jin, Tim Randolph, and Rocco Servedio. "Subset Sum in $2^{n/2}/poly(n)$ time." *RANDOM/APPROX 2023*.

Marshall Ball and Tim Randolph. "A Note on the Complexity of Private Simultaneous Messages with Many Parties." *ITC* 2022.

Xi Chen, Yaonan Jin, Tim Randolph and Rocco Servedio. "Average-Case Subset Balancing Problems." *SODA* 2022.

Nick Arnosti and Tim Randolph. "The Alaskan Hunting License Lottery is Flexible and Approximately Efficient." *Management Science* 2021; *EC* 2021.

Xi Chen, Tim Randolph, Rocco Servedio, and Tim Sun. "A Lower Bound on Cycle Finding in Sparse Digraphs." *SODA* 2020.

Emilio di Giacomo, William J. Lenhart, Giuseppe Liotta, Timothy W. Randolph, Alessandra Tappini. "(k, p)-Planarity: A Relaxation of Hybrid Planarity." arXiv:1806.11413v2. *WALCOM* 2019.

Timothy W. Randolph. "Tight Bounds for $(t, 2)$ Broadcast Domination on Finite Grids." arXiv:1805.06058. *Rose-Hulman Undergraduate Mathematics Journal* 20, 2019.

Benjamin F. Drews, Pamela E. Harris, Timothy W. Randolph. "Optimal (t, r) Broadcasts on the Infinite Grid." arXiv:1711.11116. *Discrete Applied Mathematics 255*, 2018.

Research Presentations

"The Complexity of Private Simultaneous Messages with Many Parties." 3rd Conference on Information-Theoretic Cryptography, Boston, MA, 7/6/2022.

"Average Case Subset Balancing Problems,"
Symposium on Discrete Algorithms (SODA), Virtual, 1/9/22.

"Parallel Lotteries: Insights from Alaskan Hunting Permit Allocation,"
22nd Conference on Economics and Computation (EC '21), Virtual, 7/21/21.

"Alaskan Hunting License Lotteries are Flexible & Approximately Efficient," DSI Financial and Business Analytics Center, New York, NY, 11/12/2019; also WINE 2019, Columbia University, New York, NY, 12/10/2019.

"The Case for Wasteful Allocation Mechanisms," INFORMS Workshop on Market Design, Phoenix, AZ, 6/28/2019.

"k-Ticket Lotteries: Insights From Alaska," 3rd Workshop on Mechanism Design for Social Good, Phoenix, AZ, 6/28/2019.

"(k,p)-planar Drawings of Cluster Graphs," Williams College Summer Science Expo, Williamstown, MA, 8/11/2017.

"Automated Constraint Pattern Extraction," Microsoft Bing Intern Summary Presentation, Seattle, WA, 8/17/2016.

Teaching

Instructor for COMS W3261: Computer Science Theory, Columbia University. Summer 2023.

Instructor for COMS W3261: Computer Science Theory, Columbia University. Summer 2022.

Instructor for COMS W3261: Computer Science Theory, Columbia University. Summer 2021.

Guest lecture in CSCI 4236: Computational Complexity, Columbia University. 11/1/2019.

Substitute for CSOR 4231: Analysis of Algorithms. Columbia University. 10/24/2019.

TA for COMS 4231: Analysis of Algorithms, Columbia University. 2019.

Innovative Teaching Summer Institute (ITSI) Certification. 2019.

TA for COMS 6998-06: Computation and Brain, Columbia University. 2018.

TA for COMS 3261: Computer Science Theory, Columbia University. 2019.

Service

PhD Student Representative 2022-Present
Represented the CS department student body at faculty meetings and with hiring, financial, and social support.

Mentor, Columbia Women in Science at Columbia (WISC) 2021-Present
Advised advanced CS students on their transition to graduate school.

PhD Coordinator, CUCS Emerging Scholars Program 2019-2022.
Organized ESP, a peer-taught, discussion-based seminar focused on group problem-solving and exposing students to the breadth of computer science. Developed new initiatives and curriculum to engage underrepresented groups and nontraditional students in computer science at Columbia. Quadrupled program size.

Mentor, Lumiere Research Scholars Program 2022
Advised an advanced high school student from project inception through their first publication in algorithms.

Mentor, Barnard Better, Enhance, and Advance Research Series 2022
Advised a pod of Barnard students on future research and navigating the Computer Science major.

Advisor, Columbia Undergraduate Theory Seminar 2022
Advised a group of undergraduates interested in computer science theory and philosophy on seminar presentations.

Organizer, Pre-Submission Application Review Program 2020-2021.
Helped create, implement and review applications for Columbia's first STEM PhD application feedback program.

Organizer, Columbia Grad Student Theory Retreat 2019-2021.
Created Columbia's first annual theory retreat for graduate students.

Speaker, Columbia "Demystifying the Dissertation" Initiative 2020-2021.
Lead seminars about pursuing and applying to graduate school.

Awards

Michelman Award for Exemplary Service to the CS Department 2022

Columbia CS Department Service Award 2020, 2021, and 2023

Sam Goldberg Prize
Awarded for the best colloquium in Computer Science at Williams College.

Sigma Xi 2018

Williams Class of 1960s Scholar in Computer Science (2x) 2017 and 2018
Awarded to exceptional students endorsed by the department for academic careers.

Phi Beta Kappa (Junior Year) 2017
Awarded to students in the top 5% of graduating class by GPA.

Williams Class of 1960s Scholar in Cognitive Science 2017
Awarded to exceptional students endorsed by the department for academic careers.

Interests

Trail running, books, travel, maps, drawing, mountains.