

# Timothy W. Randolph

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Harvey Mudd College  
Department of Computer Science  
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**Harvey Mudd College**, Claremont, CA  
Assistant Professor, Department of Computer Science

2024-

## EDUCATION

**Columbia University**, New York, NY 2018-2024

Ph.D., Computer Science 2024

Thesis: “Exact Algorithms for Subset Sum and Subset Balancing Problems”

M.Phil., Computer Science 2022

M.S., Computer Science 2019

*Advised by Xi Chen and Rocco A. Servedio*

**Williams College**, Williamstown, MA 2014-2018

B.A., Computer Science (Highest Honors), Mathematics (Honors), Philosophy 2018

Thesis: “ $(k, p)$ -Planar Graphs: A Generalized Planar Representation for Cluster Graphs”

*Advised by William J. Lenhart*

## TEACHING EXPERIENCE

**Harvey Mudd College**, Claremont, CA

Instructor for CSCI 145: Advanced Topics in Algorithms Spring 2026

*New course offering I developed for AY 2025-2026. Focus on collaboration and presentation skills, building mathematical independence and learning advanced algorithms topics.*

Instructor for WRIT 1: Introduction to Academic Writing Fall 2025

*Freshman course focused on developing academic writing skills.*

Advisor for CSCI 183/184: Computer Science Clinic I & II Fall 2025/Spring 2026

*Year-long capstone focused on computer science project work.* Fall 2024/Spring 2025

Instructor for CSCI 140 / MATH 168: Algorithms Spring 2026

*Comprehensive undergraduate algorithms course.* Fall 2025

Spring 2025

Fall 2024

**Columbia University**, New York, NY

Instructor for COMS 3261: Computer Science Theory Summer 2023

*Teaching focus on participatory governance and grading for equity.*

Teaching Development Program (Advanced Track) 2019-2022

*Multiyear evidence-based teaching certification in association with Columbia’s Center for Teaching and Learning.*

Instructor for COMS 3261: Computer Science Theory <i>Teaching focus on accessibility via parallel multimodal teaching strategies.</i>	Summer 2022
Instructor for COMS 3261: Computer Science Theory <i>Teaching focus on organization and accountable teaching in the hybrid environment.</i>	Summer 2021
Teaching Observation Fellow <i>Yearlong fellowship centered on peer observation and reflective teaching practice.</i>	2019-2020
Peer lectures delivered in COMS 6261: Advanced Cryptography.	2020
Guest lecture delivered in COMS 4236: Computational Complexity.	2019
Substitute lectures delivered in COMS 4231: Analysis of Algorithms.	2019
Innovative Teaching Summer Institute (ITSI) <i>Summer intensive in association with Columbia's Center for Teaching and Learning.</i>	2019
TA for COMS 3261: Computer Science Theory.	2019
TA for COMS 6998-06: Computation and the Brain. <i>Introduced anonymous grading to mitigate the effect of implicit bias on student evaluation.</i>	2018

## AWARDS

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Michelman Award for Exemplary Service to the CS Department <i>Awarded to a single student for exceptional service contributions during their PhD studies.</i>	2022
Columbia CS Department Service Award (3x) <i>Awarded to Ph.D. students in the top 10% of service contributions.</i>	2020, 2021, and 2023
Sam Goldberg Prize <i>Awarded for the best colloquium in Computer Science at Williams College.</i>	2018
Elected Member, Sigma Xi	2018
Williams Class of 1960s Scholar in Computer Science (2x) <i>Awarded to exceptional students endorsed by the department for academic careers.</i>	2017 and 2018
Elected Member, Phi Beta Kappa (Junior Year) <i>Awarded to students in the top 5% of graduating class by GPA.</i>	2017
Williams Class of 1960s Scholar in Cognitive Science <i>Awarded to exceptional students endorsed by the department for academic careers.</i>	2017

## JOURNAL AND CONFERENCE PUBLICATIONS

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- Beating Meet-in-the-Middle for Sumset Balancing Problems** Preprint, 2025.  
Tim Randolph and Karol Węgrzycki
- Testing Sumsets is Hard** ESA 2025.  
Xi Chen, Shivam Nadimpalli, Tim Randolph, Rocco Servedio, and Or Zamir  
*2025 European Symposium on Algorithms*
- A Survey of Undergraduate Theory of Computing Curricula** SIGCSE Virtual 2024.  
Ryan E. Dougherty (working group co-lead), Tim Randolph (working group co-lead), Tzu-Yi Chen, Jeff Erickson, Matthew Ferland, Dennis Komm, Jonathan Liu, Timothy Ng, Smaranda Sandu, Michael Shindler, Edward Talmage, and Thomas Zeume  
*2025 ACM Virtual Global Computing Education Conference*
- Parameterized Algorithms on Integer Sets with Small Doubling: Freiman’s Theorem, Subset Sum and  $k$ -Sum** ESA 2024.  
Tim Randolph and Karol Węgrzycki  
*2024 European Symposium on Algorithms*
- Experience Report: Participatory Governance in the CS Theory Classroom** SIGCSE 2024.  
Tim Randolph  
*2024 ACM Technical Symposium on Computer Science Education*  
[View Online](#)
- Exact Algorithms for Finding Sumsets** Preprint, 2023.  
Tim Randolph
- Subset Sum in  $2^{n/2}/poly(n)$  Time** RANDOM 2023  
Xi Chen, Yaonan Jin, Tim Randolph, and Rocco Servedio  
*27th International Conference on Randomization and Computation*  
[View Online](#)
- A Note on the Complexity of Private Simultaneous Messages with Many Parties** ITC 2022  
Marshall Ball and Tim Randolph  
*3rd Annual Conference on Information-Theoretic Cryptography*  
[View Online](#)
- Average-Case Subset Balancing Problems** SODA 2022  
Xi Chen, Yaonan Jin, Tim Randolph and Rocco Servedio  
*33rd Annual ACM-SIAM Symposium on Discrete Algorithms*  
[View Online](#)

**Parallel Lotteries: Insights from Alaskan Hunting Permit Allocation**

Nick Arnosti and Tim Randolph

MS 2021; EC 2021

*Management Science* Vol. 68, No. 7 (Journal version)

22nd ACM Conference on Economics and Computation, as “The Alaskan Hunting License Lottery is Flexible and Approximately Efficient” (Conference abstract)

[View Online](#)

**A Lower Bound on Cycle Finding in Sparse Digraphs**

SODA 2020; TALG 2022

Xi Chen, Tim Randolph, Rocco A. Servedio, and Tim Sun

*ACM Transactions on Algorithms*, Vol. 18, Issue 4 (Journal Special Issue)

31st Annual ACM-SIAM Symposium on Discrete Algorithms (Conference Version)

[View Online](#)

**$(k, p)$ -Planarity: A Relaxation of Hybrid Planarity**

WALCOM 2019; TCS 2021

Emilio di Giacomo, William J. Lenhard, Giuseppe Liotta, Timothy W. Randolph, and Alessandra Tappini

*Theoretical Computer Science*, Vol. 896 (Journal Special Issue)

13th International Conference and Workshops on Algorithms and Computation (Conference)

[View Online](#)

**Tight Bounds for  $(t, 2)$ -Broadcast Domination on Finite Grids**

RHUMJ 2019.

Timothy W. Randolph

*Rose-Hulman Undergraduate Mathematics Journal*, Vol. 20

[View Online](#)

**Optimal  $(t, r)$ -Broadcasts on the Infinite Grid**

DAM 2019.

Benjamin F. Drews, Pamela E. Harris, and Timothy W. Randolph

*Discrete Applied Mathematics*, Vol. 255

[View Online](#)

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## INVITED TALKS AND POSTERS

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### RESEARCH PRESENTATIONS

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“Exact and Parameterized Algorithms for Subset Sum Problems” (thesis defense)

Columbia University, New York, NY, 4/9/24

“Designing Algorithms for Hard Problems: A Case Study” (talk)

*Williams College Computer Science Colloquium Series*, Williamstown, MA, 4/5/24

“Experience Report: Participatory Governance in the Computer Science Theory Classroom”

(talk), *ACM Technical Symposium on Computer Science Education (SIGCSE)*, Portland, OR, 3/21/24

“Algorithmic Approaches to Subset Sum (And Other Hard Problems)” (talk)

Harvey Mudd College, Pomona College, Amherst College, Bard College, Union College, 10/31/2023-11/25/2023

“Log Shaving for Subset Sum” (talk)

*27th International Conference on Randomization and Computation (RANDOM 2023)*, Atlanta, GA, 9/12/2023

“The Complexity of PSM with Many Parties” (talk)

*3rd Conference on Information-Theoretic Cryptography (ITC 2022)*, Boston, MA, 7/6/2022

“Average-Case Subset Balancing Problems” (talk)

*31st Annual Symposium on Discrete Algorithms (SODA 2019)*, Virtual, 1/9/22

“Parallel Lotteries: Insights from Alaskan Hunting Permit Allocation” (poster)

*22nd Conference on Economics and Computation (EC 2021)*, Virtual, 7/21/21

“Alaskan Hunting License Lotteries are Flexible & Approximately Efficient” (talk, poster)

DSI Financial and Business Analytics Center, New York, NY, 11/12/2019

*15th Conference on Web and Internet Economics (WINE 2019)*, New York, NY, 12/10/2019

“The Case for Wasteful Allocation Mechanisms” (talk, poster)

*1st INFORMS Workshop on Market Design*, Phoenix, AZ, 6/28/2019

*3rd Workshop on Mechanism Design for Social Good (MD4SG 2019)*, Phoenix, AZ, 6/28/2019

“(k,p)-planar Drawings of Cluster Graphs” (talk)

Williams College Summer Science Expo, Williamstown, MA, 8/11/2017

“Automated Constraint Pattern Extraction” (talk)

Microsoft Bing Intern Summary Presentations, Seattle, WA, 8/17/2016

“Simplifying the Driver Stack for Windows 10 on the Raspberry Pi” (talk)

Microsoft IoT Core Summary Presentations, Seattle, WA, 8/15/2015

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## OUTREACH PRESENTATIONS

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“Graduate School in Computer Science” (panel)

Harvey Mudd College Summer of CS, Claremont, CA, 7/8/2025.

Southern California REU Symposium, Claremont, CA, 7/31/25.

“Navigating Graduate School in (Theoretical) Computer Science” (talk)

Columbia Emerging Scholars Program (ESP) Research Symposium, New York, NY, 4/12/2024

“Research and Exploration in (Theoretical) Computer Science” (talk)

Columbia Engineering Summer High School Academic Program (SHAPE), New York, NY, 8/11/2022

“Demystifying the Dissertation: Research in Theoretical Computer Science” (talk)

Columbia University Demystifying the Dissertation Seminar Series, New York, NY, 12/9/2020

“Research in Algorithms and Mechanism Design” (talk)

Columbia Emerging Scholars Program (ESP) Research Symposium, New York, NY, 11/20/2020

“Demystifying the PhD: Applying to PhD Programs” (talk)

Columbia University PhD Project Presentation Series, New York, NY, 11/18/2020

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## SERVICE

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### PROFESSIONAL SERVICE

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#### **Program Committee / Conference Reviews**

ACM Symposium on Theory of Computing (STOC)

ACM-SIAM Symposium on Discrete Algorithms (SODA)

ACM Special Interest Group on Computer Science Education Technical Symposium (SIGCSE)

European Symposium on Algorithms (ESA)

International Colloquium on Automata, Languages, and Programming (ICALP)

Symposium on Simplicity in Algorithms (SOSA)

Symposium on Theoretical Aspects of Computer Science (STACS)

#### **Session Chair**

ACM-SIAM Symposium on Discrete Algorithms (SODA 2022)

### INSTITUTIONAL SERVICE

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**CS Curricular Redesign Committee Member**, Harvey Mudd College 2024-  
*Committee work during the redesign of the HM introductory CS sequence. Participated in Capacity, External Compatibility, and Mathematical Foundations working groups.*

**PhD Student Representative**, Columbia University 2022-2024  
*Represented the CS department student body at faculty meetings. Worked to ensure timely compensation of graduate students, international student rights, and facilities maintenance. Streamlined the conference and travel reimbursement process.*

**PhD Coordinator**, Columbia University 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 support and engage underrepresented groups and nontraditional students in computer science at Columbia. Quadrupled program size.*

**Union Organizer**, Student Workers of Columbia (UAW Local 2710) 2021-2022.  
*Educated, enrolled and advocated for computer science graduate students during contract negotiations and subsequent union recognition.*

**Founding Organizer**, Columbia Pre-Submission Application Review Program 2020-2021.  
*Helped create, implement and review applications for Columbia’s first STEM PhD application feedback program for underrepresented and nontraditional applicants.*

**Founding Organizer**, Columbia Graduate Student Theory Retreat 2019-2021  
*Created Columbia’s first annual theory retreat for graduate students.*

**Speaker**, Columbia “Demystifying the Dissertation” Initiative 2020-2021  
*Lead undergraduate seminars on applying to and navigating graduate school.*

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ADVISING AND MENTORSHIP

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**Mentor**, Williams CS Alumni Mentorship Program 2022-2024  
*Mentored advanced undergraduates on career navigation and the transition to graduate school.*

**Mentor**, Women in Science at Columbia (WISC) 2021-2024  
*Mentored advanced undergraduates during their application and transition to graduate school.*

**Mentor**, Lumiere Research Scholars Program 2022  
*Mentored talented high school students pursuing independent research projects in computer science theory and mechanism design.*

**Mentor**, Barnard Better, Enhance, and Advance Research Series (BEARS) 2022  
*Advised a group of Barnard undergraduates with an early interest in research careers.*

**Advisor**, Columbia Undergraduate Theory Seminar 2022  
*Consulted with a group of advanced undergraduate students on the development of their presentations for a student-run seminar on computer science and philosophy.*