# Tim Randolph

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| **Research Interests** | Property testing, sublinear & subexponential algorithms, fair allocation, market & mechanism design for social good. |

**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

Lakeside School, Seattle, WA.      2010-2014

**Publications**

Nick Arnosti and Tim Randolph. "The Alaskan Hunting License Lottery is Flexible and Approximately Efficient." SSRN:3370605. 2019.

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.

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| Research Presentations | "Alaskan Hunting License Lotteries are Flexible & Approximately Efficient," DSI Financial and Business Analytics Center, New York, NY, 11/12/2019. |
| | "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. |

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| Work Experience | Makerspace Director, Williams College. | 2015-2018 |
| | Coordinated student and faculty access, staff training, and maintenance of 3D printers, 3D scanners, and virtual reality systems. Established a volunteer program with training and certification for student associates. | |
| | Research Software Engineering Intern, Microsoft. | 2016 |
| | Designed and built a software component to parse user queries based on syntactic and semantic features and extract constraints on user requests. Built a pipeline to extract constraint patterns from large datasets. | |
| | Research Assistant, Williams College Categories Lab. | 2015 |
| | Implemented attention and behavior experiments in JavaScript for Amazon Mechanical Turk. | |
| | Software Engineering Intern, Microsoft. | 2015 |
| | Redesigned I/O packet control flow on $I^2C$ and SPI port drivers on Windows 10 for internet of things devices. Rebuilt the Win10 SPI bus driver stack to decrease overhead slowdown by a factor of 20 on short transfers. | |
| | Makerspace Consultant, Williams College. | 2014-2015 |

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| Teaching | 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. |

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| Service | PhD Coordinator, CUCS Emerging Scholars Program.      2019-Present. Organize ESP, a peer-taught, discussion-based seminar focused on group problem-solving and exposing students to the breadth of computer science. Develop new initiatives and curriculum to engage underrepresented minorities and nontraditional students in computer science at Columbia. |
| | Organizer, Columbia Grad Student Theory Retreat      2019-Present. Created Columbia's first annual theory retreat for graduate students. |
| Awards | Sam Goldberg Prize Awarded for the best colloquium in Computer Science at Williams College. |
| | Sigma Xi |
| | Phi Beta Kappa (Junior Year) Awarded to students in the top 5% of graduating class by GPA. |
| | Williams Class of 1960s Scholar in Computer Science (2x) Awarded to exceptional students endorsed by the department for academic careers. |
| | Williams Class of 1960s Scholar in Cognitive Science Awarded to exceptional students endorsed by the department for academic careers. |
| Interests | Long-distance running, urban exploration, modernism, science fiction, classic literature, yoga, world travel. |