

# R. Teal Witter

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## Education

### New York University

*PhD in Computer Science*

Advised by Lisa Hellerstein and Christopher Musco

New York, NY

September 2020–Present

### Middlebury College

*BA in Mathematics, BA in Computer Science*

Phi Beta Kappa

Middlebury, VT

February 2017–May 2020

## Research Interests

Algorithm design and analysis, deep learning, discrete optimization, randomized algorithms, and quantum computing

## National Awards

NSF Graduate Research Fellow

2022-2025

Goldwater Scholar

2019

Academic All-American

2015

## Teaching

### Randomized Algorithms for Data Science

*Course Instructor*

Middlebury CSCI 1052

Winter 2024

### Deep Learning

*Course Instructor*

Middlebury CSCI 1051

Winter 2023

### Deep Learning

*Course Assistant*

NYU CS-GY 6953

Fall 2022, Spring 2023, Fall 2023

### Algorithmic Machine Learning and Data Science

*Course Assistant*

NYU CS-GY 6763

Fall 2021, Spring 2022, Fall 2023

### Machine Learning

*Course Assistant*

NYU CS-GY 6923

Spring 2021, Spring 2023

## Publications

*In the tradition of mathematics and theoretical computer science, authors appear in alphabetical order unless otherwise marked with an asterisk.*

- [1] R. T. Witter\* and L. Rosenblatt, "I open at the close: A deep reinforcement learning evaluation of open streets initiatives," in *AAAI Conference on Artificial Intelligence*, 2024.

- [2] M. Czekanski, S. Kimmel, and R. T. Witter, "Robust and space-efficient dual adversary quantum query algorithms," in *European Symposium on Algorithms*, 2023.
- [3] L. Rosenblatt and R. T. Witter, "Counterfactual fairness is basically demographic parity," in *AAAI Conference on Artificial Intelligence*, 2023.
- [4] L. Hellerstein, D. Kletenik, N. Liu, and R. T. Witter, "Adaptivity gaps for the stochastic boolean function evaluation problem," in *Workshop on Approximation and Online Algorithms*, 2022.
- [5] L. Hellerstein, T. Lidbetter, and R. T. Witter, "A local search algorithm for the min-sum submodular cover problem," in *International Symposium on Algorithms and Computation*, 2022.
- [6] C. Musco, I. Ramesh, J. Ugander, and R. T. Witter, "How to quantify polarization in models of opinion dynamics," in *International Workshop on Mining and Learning with Graphs*, 2022.
- [7] S. Kimmel and R. T. Witter, "A query-efficient quantum algorithm for maximum matching on general graphs," in *Algorithms and Data Structures Symposium*, 2021, pp. 543–555.
- [8] R. T. Witter, "Backgammon is hard," in *International Conference on Combinatorial Optimization and Applications*, 2021.
- [9] R. T. Witter\* and A. Lyford, "Applications of graph theory and probability in the board game ticket to ride," in *International Conference on the Foundations of Digital Games*, 2020.
- [10] K. DeLorenzo, S. Kimmel, and R. T. Witter, "Applications of the quantum algorithm for st-connectivity," in *Conference on the Theory of Quantum Computation, Communication and Cryptography*, 2019.

## Talks

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### **Estimating the Impact of Social Programs in Resource-Constrained Settings**

NYU-KAIST Inclusive AI Workshop November 2023

### **Robust and Space-Efficient Dual Adversary Quantum Query Algorithms**

Centrum Wiskunde & Informatica QuSoft Seminar September 2023

Quantum Computing and Optimization Minisymposium at SIAM NNP October 2023

### **Adaptivity Gaps for the Stochastic Boolean Function Evaluation Problem**

Workshop on Approximation and Online Algorithms September 2022

### **How to Quantify Polarization in Models of Opinion Dynamics**

International Workshop on Mining and Learning with Graphs August 2022

### **A Local Search Algorithm for the Min-Sum Submodular Cover Problem**

International Symposium on Algorithms and Computation December 2022

International Workshop on Mining and Learning with Graphs January 2022

### **Backgammon is Hard**

International Workshop on Mining and Learning with Graphs December 2021

### **A Query-Efficient Quantum Algorithm for Maximum Matching on General Graphs**

International Workshop on Mining and Learning with Graphs August 2021

### **Applications of Graph Theory and Probability in the Board Game *Ticket to Ride***

International Workshop on Mining and Learning with Graphs

September 2020

Contributed Paper Session at the Joint Mathematics Meetings

January 2020

**Applications of the Quantum Algorithm for  $st$ -Connectivity**

Conference on the Theory of Quantum Computation, Communication and Cryptography June 2019

## Service

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### Conference Reviewing

QIP 2022, ICALP 2022, TQC 2022, NeurIPS 2023, ICLR 2024, ICML 2024, NeurIPS 2024, AAAI 2025

### Journal Reviewing

Information Processing Letters, Theoretical Computer Science

## Outreach

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**Extracurricular Coding Club**

*Instructor*

**Brooklyn International High School**

*Spring 2021-2023*

## Advising

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**Syna Sachdeva**

*Barnard College '26*

**Gaussian Splatting with Latent Representations**

*Summer 2024*

**Jack Liu**

*New York University '25*

**Latent Guidance of Large Language Models**

*Spring 2024-Present*

**Xiaorui Lei**

*Brooklyn International High School '22*

**Active Learning and Importance Sampling**

*Summer 2022*

**Bryant Chen**

*Brooklyn International High School '22*

**Active Learning and Importance Sampling**

*Summer 2022*