

# Zachary I. Schutzman

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3401 Walnut Street, Office 409B  
Philadelphia, PA 19104  
ianzach@seas.upenn.edu  
zachschutzman.com  
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**INTERESTS** Algorithmic game theory and economics, fairness in algorithm design, differential privacy and its applications, computational social science, theoretical machine learning, mathematics of redistricting

**EDUCATION** **University of Pennsylvania** Philadelphia, PA 2016-2021 (expected)  
Ph.D., Computer and Information Science  
Advisor: Aaron Roth  
Affiliations: Warren Center for Data & Network Science, Penn Research in Machine Learning, CS Theory Research Group

**Colby College** Waterville, ME 2012-2016  
B.A., *cum laude*, Economics (Honors) and Mathematics  
*Phi Beta Kappa*, William D. Adams Presidential Scholar, Distinction in Economics  
Minor: Computer Science  
Thesis: *Computational Simulation and Analysis of Landscape Conservation Auctions*

**RESEARCH** Authors are listed alphabetically by surname

**The Gerrymandering Jumble: Map Projections Permute Districts' Compactness Scores**

To appear in *Cartography and Geographic Information Science*, 2020  
with Assaf Bar-Natan and Lorenzo Najt

**Trade-Offs in Fair Redistricting**

In *Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society (AIES)*, 2020  
accepted with an oral presentation

**Geometry of Graph Partitions via Optimal Transport** (in submission)

Manuscript: <https://arxiv.org/abs/1910.09618>  
with Tara Abrishami, Nestor Guillen, Parker Rule, Justin Solomon, Thomas Weighill, and Si Wu

**Total Variation Isoperimetric Profiles**

In *SIAM Journal on Applied Algebra and Geometry* Vol. 3 Issue 4  
with Daryl DeFord, Hugo Lavenant, and Justin Solomon

**Equilibrium Characterization for Data Acquisition Games**

In *Proceedings of the 28th International Joint Conferences on Artificial Intelligence (IJCAI)*, 2019  
with Jinshuo Dong, Hadi Elzayn, Shahin Jabbari, and Michael Kearns

### **The Price of Privacy in the Keynesian Beauty Contest**

In *Proceedings of ACM EC '19: ACM Conference on Economics and Computation* (EC), 2019

with Hadi Elzayn

### **Fair Algorithms for Learning in Allocation Problems**

In *Proceedings of the second ACM Conference on Fairness, Accountability, and Transparency* (FAT\*), 2019

with Hadi Elzayn, Shahin Jabbari, Michael Kearns, Christopher Jung, Seth Neel, and Aaron Roth

### **Strategic Classification from Revealed Preferences**

In *Proceedings of the 19th ACM Conference on Economics and Computation* (EC), 2018

with Jinshuo Dong, Aaron Roth, Bo Waggoner, and Zhiwei Steven Wu

appeared at the Workshop on Learning in the Presence of Strategic Behavior (NeurIPS 2017) as a long oral presentation

## **OTHER PROJECTS**

### **GerryChain**, Contributor

An open-source Python Markov Chain Monte Carlo sampler to generate ensembles of redistricting plans.

Available at <https://github.com/mggg/GerryChain>

### **District-Shortening Flow**

A minimally technical introduction to ‘multiscale compactness’ using curve-shortening flow.

Available at <https://mggg.org/distflow>.

### **Redistricting Gridlandia**

An gentle introduction to the mathematics of redistricting with interactive web components.

Appeared in *Geometry v. Gerrymandering*, Moon Duchin *Scientific American*, Nov. 2018.

Available at <https://mggg.org/metagraph>.

## **ASSISTANT- SHIPS**

### **Graduate Research Fellow** Voting Rights Data Institute, MIT/Tufts Summer 2018

Worked on problems at the interface of mathematics, computing, and statistics with redistricting and voting rights with expert practitioners, faculty, and students from a range of disciplines.

Hosts: Moon Duchin (Tufts Mathematics) & Justin Solomon (MIT CSAIL)

<b>TEACHING &amp; MENTORSHIP</b>	<b>Voting Rights Data Institute Faculty</b> , MIT/Tufts	Summer 2019
	Co-led independent research groups of undergraduate and graduate students from various disciplinary backgrounds on topics at the intersection of mathematics, computing, and voting rights. Organized and co-taught a series of hands-on workshops introducing students to topics and techniques in optimization.	
	<b>Independent Study</b>	
	Michael Ramdatt, <i>Quadratic Voting Analysis</i> (with Bo Waggoner)	Spring 2018
	<b>Teaching Assistantships</b>	
	Algorithmic Game Theory (NETS 412), UPenn	Spring 2018
	Networked Life (NETS 112), UPenn	Fall 2017
	Game Theory (EC 379), Colby College	Spring 2016
	Data Structures and Algorithms (CS 231), Colby College	Fall 2015
	Computational Thinking (CS 151/152), Colby College	2014-2015
<b>TALKS</b>	<b>Trade-Offs in Fair Redistricting</b>	February 2020
	AIES	
	<b>Equilibrium Characterization for Data Acquisition Games</b>	August 2019
	IJCAI	
	<b>Introduction to the Metagraph of Districting Plans</b>	June 2019
	Voting Rights Data Institute	
	<b>Graphs, Geometry, and Gerrymanders</b>	February 2019
University of Toronto Dept. of Mathematics <i>Diet Graduate Seminar</i>		
	<b>Shape Analysis for Redistricting</b>	February 2019
	University of Toronto Dept. of Mathematics <i>Hyperbolic Lunch Seminar</i>	
	<b>Computational Simulation and Analysis for Landscape Auctions</b>	May 2016
	Honors Thesis Defense	
<b>SERVICE</b>	<b>Conference Reviewing</b>	
	AAAI 2020 (PC), ICML 2019, EC 2018	
<b>TECHNICAL SKILLS</b>	Python, C++, Julia, MATLAB, QGIS, Isadora	