

Ellen Vitercik

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Education

2015-Present	PHD in Computer Science <i>Advisors: Maria-Florina Balcan and Tuomas Sandholm</i>	Carnegie Mellon University
2018	MS in Computer Science	Carnegie Mellon University
2015	BA in Mathematics, <i>summa cum laude</i> <i>GPA: 4.01/4.33</i>	Columbia University
2014	Budapest Semesters in Mathematics <i>GPA: 4.25/4.33</i>	

Honors and awards

2019-2021	IBM PhD Fellowship <i>\$95,000 over two years.</i>	
2019-2021	Fellowship in Digital Health <i>\$84,272 over two years. From Carnegie Mellon University's Center for Machine Learning and Health.</i>	
2017	Teaching Assistant of the Year Award <i>CMU Machine Learning Department</i>	
2016-2019	National Science Foundation Graduate Research Fellowship <i>\$138,000 over three years.</i>	
2016-2017	Microsoft Research Women's Fellowship <i>\$20,000 over one year.</i>	
2015-2021	National Physical Science Consortium Fellowship (declined) <i>\$120,000 over six years.</i>	
2015-2017	Kellett Fellowship (declined) <i>Full scholarship (£79,133) for two years of postgraduate study at Oxford.</i>	
2014	Phi Beta Kappa Junior Inductee <i>Awarded to the top 2% of the graduating Columbia College class.</i>	
2012	Columbia University Class of 1956 Scholarship	

Employment

- 2019 Google Research, New York
Research Intern, Modeling and Data Science Group.
- 2018 Microsoft Research, New England
Research Intern, worked with Christian Borgs, Jennifer Chayes, and Adam Tauman Kalai.

Publications

CONFERENCE PAPERS

- 2019 Christian Borgs, Jennifer Chayes, Nika Haghtalab, Adam Tauman Kalai, and Ellen Vitercik.
Algorithmic greenlining: An approach to increase diversity.
AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society (AIES).
- 2018 Maria-Florina Balcan, Travis Dick, and Ellen Vitercik.
Dispersion for data-driven algorithm design, online learning, and private optimization.
IEEE Symposium on Foundations of Computer Science (FOCS).
- 2018 Maria-Florina Balcan, Tuomas Sandholm, and Ellen Vitercik.
A general theory of sample complexity for multi-item profit maximization.
In Proceedings of the ACM Conference on Economics and Computation (EC).
- 2018 Maria-Florina Balcan, Travis Dick, Tuomas Sandholm, and Ellen Vitercik.
Learning to branch.
International Conference on Machine Learning (ICML).
- 2018 Bernhard Haeupler, Amirbehshad Shahrashbi, and Ellen Vitercik.
Synchronization strings: Channel simulations and interactive coding for insertions and deletions.
International Colloquium on Automata, Languages and Programming (ICALP).
- 2017 Maria-Florina Balcan, Vaishnavh Nagarajan, Ellen Vitercik, and Colin White.
Learning-theoretic foundations of algorithm configuration for combinatorial partitioning problems.
Conference on Learning Theory (COLT).
- 2016 Maria-Florina Balcan, Tuomas Sandholm, and Ellen Vitercik.
Sample complexity of automated mechanism design.
Conference on Neural Information Processing Systems (NeurIPS).
- 2016 Maria-Florina Balcan, Ellen Vitercik, and Colin White.
Learning combinatorial functions from pairwise comparisons.
Conference on Learning Theory (COLT).

WORKSHOP PAPERS

- 2018 Maria-Florina Balcan, Travis Dick, and Ellen Vitercik.
Dispersion for private optimization of piecewise Lipschitz functions.
Workshop on Privacy in Machine Learning and Artificial Intelligence at the International Conference on Machine Learning (ICML).
- 2018 Maria-Florina Balcan, Tuomas Sandholm, and Ellen Vitercik.
A general theory of sample complexity for multi-item profit maximization.
AAMAS-IJCAI Workshop on Agents and Incentives in Artificial Intelligence.
- 2017 Maria-Florina Balcan, Travis Dick, and Ellen Vitercik.
Differentially private algorithm configuration.
Workshop on Private Secure Machine Learning at the International Conference on Machine Learning (ICML).
- 2017 Maria-Florina Balcan, Tuomas Sandholm, and Ellen Vitercik.
Sample complexity of multi-item profit maximization.
Workshop on Algorithmic Game Theory and Data Science at the Conference on Economics and Computation (EC).

MANUSCRIPTS

- 2019 Maria-Florina Balcan, Tuomas Sandholm, and Ellen Vitercik.
Estimating approximate incentive compatibility.
- 2019 Daniel Alabi, Adam Tauman Kalai, Katrina Ligett, Cameron Musco, Christos Tzamos, and Ellen Vitercik.
Learning to prune: Speeding up repeated computations.

Tutorials and workshops

- 2019 **New Frontiers of Automated Mechanism Design for Pricing and Auctions**
International Joint Conferences on Artificial Intelligence (IJCAI) *Forthcoming*
with Tuomas Sandholm
- 2019 ACM Symposium on Theory of Computing (STOC) *Forthcoming*
with Maria-Florina Balcan and Tuomas Sandholm
- 2019 Conference on Economics and Computation (EC) *Forthcoming*
with Maria-Florina Balcan and Tuomas Sandholm
- 2019 AAAI Conference on Artificial Intelligence
with Maria-Florina Balcan and Tuomas Sandholm
- 2018 International Conference on Machine Learning (ICML)
with Maria-Florina Balcan and Tuomas Sandholm under the title Machine Learning in Automated Mechanism Design for Pricing and Auctions

Talks

- Learning to Branch**
2018 Carnegie Mellon University
2018 International Conference on Machine Learning (ICML)

- 2018 **Dispersion for Data-Driven Algorithm Design, Online Learning, and Private Optimization**
Northwestern Quarterly Theory Workshop
- 2018 **Learning-Theoretic Foundations of Algorithm Configuration for Combinatorial Partitioning Problems**
INFORMS Annual Meeting
- 2018 **A General Theory of Sample Complexity for Multi-Item Profit Maximization**
INFORMS Annual Meeting
- 2018 China Theory Week
- 2018 AAMAS-IJCAI Workshop on Agents and Incentives in Artificial Intelligence
- 2018 Conference on Economics and Computation (EC)
- 2017 **Sample Complexity of Multi-Item Profit Maximization**
Harvard University, Economics and CS Research Seminar
- 2017 Dagstuhl Workshop on *Game Theory Meets Computational Learning Theory*
- 2017 Workshop on Algorithmic Game Theory and Data Science at the Conference on Economics and Computation (EC)
- 2017 **Differentially Private Algorithm and Auction Configuration**
Carnegie Mellon University, Theory Lunch
- 2017 **Foundations of Application-Specific Algorithm Configuration**
Massachusetts Institute of Technology, Machine Learning Tea
- 2017 Microsoft Research New England, Machine Learning Lunch
- 2016 Carnegie Mellon University, Artificial Intelligence Lunch
- 2017 **Learning Submodular Functions from Pairwise Comparisons**
Carnegie Mellon University, Open House for Admitted PhD Students
- 2016 Conference on Learning Theory (COLT)
- 2016 **Sample Complexity of Automated Mechanism Design**
University of Pennsylvania, Theory Lunch
- 2016 Carnegie Mellon University, Theory Lunch

Teaching

- 2018 **Guest lecturer**
Machine Learning and Differential Privacy
Carnegie Mellon University course on Advanced Introduction to Machine Learning
- 2017 Introduction to Auction Design via Machine Learning
Carnegie Mellon University course on Advanced Introduction to Machine Learning
- 2017 Introduction to Research in Machine Learning
Carnegie Mellon University course on Research and Innovation in CS
- 2017 Teaching Assistant for Introduction to Machine Learning
Carnegie Mellon University
Won the Machine Learning Department's Teaching Assistant of the Year Award.

- 2015-Present Volunteer Instructor for Carnegie Mellon University TechNights
Workshop for middle school girls.
Sessions led: “Strategic Voting”, “Game Theory”, and “Smashing Computers”.
- 2015 Teaching Assistant for Computer Science Theory
Columbia University
- 2014-2015 Workshop Leader for Columbia University’s Computer Science Emerging Scholars Program

Mentoring

- 2018-2019 Rong He
Undergraduate student from Carnegie Mellon University working on a project in the intersection of economics and machine learning.
- 2017 Mengxiao Zhang
Undergraduate student from Peking University working on a project in the intersection of economics and machine learning.

Professional Services

- 2019-Present Member of the Carnegie Mellon University Speakers Club
Evaluate PhD students’ talks.
 - 2018-Present Organizer of the Carnegie Mellon University Learning Theory Reading Group
 - 2018, 2019 Program committee member for the AutoML Workshop at the International Conference on Machine Learning (ICML).
 - 2018 INFORMS Annual Meeting Session Chair
Session on Machine Learning and Optimization for Automated Mechanism Design.
 - 2017-2018 PhD Admissions Committee Member at Carnegie Mellon University
 - 2016-2017 Co-coordinator of the Carnegie Mellon University Artificial Intelligence Lunch and Seminar
- Reviewer for IJCAI ’16; PODC ’16; STOC ’17; NeurIPS ’17, ’18; SODA ’18; COLT ’18; RANDOM ’18; WINE ’18, AIES ’19, AISTATS ’19, INFORMS Journal on Computing ’19; ICML ’17, ’18, ’19; Artificial Intelligence Journal ’19, FOCS’19.