Max Simchowitz

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EDUCATION

University of California, Berkeley, Berkeley, CA USA   **2015 - present**

Ph.D., Computer Science advised by Benjamin Recht and Michael I. Jordan

- Cumulative GPA: 4.0

Princeton University, Princeton, NJ USA   **June 2015**

A.B., Mathematics

- *Summa Cum Laude*, Major GPA 4.00, Cumulative GPA 3.99
- Senior Thesis: *Dictionary Learning and Anti-Concentration*, advised by Sanjeev Arora
- Junior Thesis: *Zero-Inflated Poisson for Recommendation*, advised by David M. Blei
- Certificate in Statistics and Machine Learning

AWARDS

Open Philanthropy AI Fellowship (supported by the Good Ventures Foundation), 2019.
Best Paper, ICML, 2018.
Berkeley Fellowship (supported by the Rose Hill Foundation), UC Berkeley, 2018.
Tong Leong Lim Pre-Doctoral Prize, UC Berkeley, 2017.
NSF GRFP Fellowship, 2015-2017
George B. Covington Prize for Excellence in Mathematics, Princeton University, 2015.
Phi Beta Kappa, Early Induction (Top 2% of Graduating Class), Princeton University, 2014.
Shapiro Prize for Academic Excellence, Princeton University, 2012,2013.
Manfred Pyka Memorial Prize for Physics, Princeton University, 2012.
Quin Morton '36 Prize for Writing, Princeton University, 2012.

PUBLICATIONS

"Improper Learning for Nonstochastic Control," Max Simchowitz, Karan Singh, Elad Hazan. *COLT*, 2020.

"Naive Exploration is Optimal for Online LQR", Max Simchowitz, Dylan Foster. *ICML*, 2020.

"Logarithmic Regret for Online Control with Adversarial Disturbances", Dylan Foster, Max Simchowitz. *ICML*, 2020.

"Reward-Free Exploration for Reinforcement Learning," Chi Jin, Akshay Krishnamurthy, Max Simchowitz, Tiancheng Yu. *ICML*, 2020.

"The gradient complexity of linear regression," Mark Braverman, Elad Hazan, Max Simchowitz, Blake Woodworth. *COLT*, 2020.

"Balancing Competing Objectives with Noisy Data: Score-Based Classifiers for Welfare-Aware Machine Learning," Esther Rolf, Max Simchowitz, Sarah Dean, Lydia T. Liu, Daniel Björkegren, Moritz Hardt, Joshua Blumenstock. *ICML*, 2020.

"A Successive-Elimination Approach to Adaptive Robotic Source Seeking," Esther Rolf, David Fridovich-Keil, Max Simchowitz Benjamin Recht, Claire Tomlin. *IEEE Transactions on Robotics*, 2020.

"Non-Asymptotic Gap-Dependent Regret Bounds for Tabular MDPs," Max Simchowitz, Kevin Jamieson. *NeurIPS*, 2019.

"Learning Linear Dynamical Systems with Semi-Parametric Least Squares," Max Simchowitz, Ross Boczar, Benjamin Recht. *COLT*, 2019.

"The Implicit Fairness Criterion of Unconstrained Learning," Lydia Liu, Max Simchowitz, Moritz Hardt. *ICML*, 2019.

"Balancing Competing Objectives for Welfare-Aware Machine Learning with Imperfect Data." Esther Rolf, Max Simchowitz, Sarah Dean, Lydia T. Liu, Daniel Bjrkegren, Moritz Hardt, Joshua Blumenstock. *The NeurIPS Joint Workshop on AI for Social Good,*, 2019. Best paper award.

"First-order Methods Almost Always Avoid Saddle Points Jason D. Lee, Ioannis Panageas, Georgios Piliouras, Max Simchowitz, Michael I. Jordan, Benjamin Recht". *Mathematical Programming (pg. 1-27)*, 2019.

"Learning Without Mixing: Towards A Sharp Analysis of Linear System Identification," Max Simchowitz, Horia Mania, Stephen Tu, Benjamin Recht, Michael I. Jordan. *COLT*, 2018.

"Delayed Impact of Fair Machine Learning," Lydia T. Liu, Sarah Dean, Esther Rolf, Max Simchowitz, Moritz Hardt. *ICML*, 2018. Best Paper Award.

"Tight Query Complexity Lower Bounds for PCA via Finite Sample Deformed Wigner Law," Max Simchowitz, Ahmed El Alaoui, Benjamin Recht. *STOC*, 2018.

"Approximate Ranking from Pairwise Comparisons," Reinhard Heckel, Max Simchowitz, Kannan Ramchandran, Martin J. Wainwright. *AISTATS*, 2018.

"The Simulator: Towards a Richer Understanding of Adaptive Sampling in the Moderate-Confidence Regime," Max Simchowitz, Kevin Jamieson, and Benjamin Recht. *COLT*, 2017.

"Best-of-K Bandits," Max Simchowitz, Kevin Jamieson, and Benjamin Recht. *COLT*, 2016.

"Gradient Descent Converges to Minimizers," Jason D. Lee, Max Simchowitz, Michael I. Jordan, and Benjamin Recht. *COLT*, 2016.

"Low-rank Solutions of Linear Matrix Equations via Procrustes Flow," Stephen Tu, Ross Boczar, Max Simchowitz, Mahdi Soltanolkotabi, Benjamin Recht. *ICML*, 2016.

Additional preprints: `https://people.eecs.berkeley.edu/~msimchow/publications.html`

INVITED TALKS	November 2019, Asilomar Conference
	February 2019, Machine Learning Seminar, Microsoft Research NY.
	May 2018, Machine Learning Seminar, University of Washington.
	April 2018, Machine Learning Theory Seminar, Princeton University.
TEACHING	**Teaching Assistant, UC Berkeley** CS 189/289A, Introduction to Machine Learning, Fall 2018.
	Teaching Assistant, UC Berkeley EE 227C, Convex Optimization and Approximation, Spring 2018. `https://ee227c.github.io/`. *Link for course notes.*
RELEVANT COURSEWORK:	**Berkeley Coursework:** Theoretical Statistics (Classical), Theoretical Statistics (High-Dimensional), Probability Theory (Random Processes, Measure-Theoretic), Convex Optimization, Convex Optimization and Approximation (Algorithm Focused), Robust Control, Adaptive Learning and Decision Making, Fairness in Machine Learning.
	Graduate Coursework at Princeton: Coding Theory and Random Graphs, Advanced Algorithm Design, Theoretical Machine Learning, Advanced Optimization (Convex and Stochastic), Statistical Learning and Nonparametric Estimation, High-Dimensional Statistics, Measure-Theoretic Probability Theory, Natural Algorithms, Overcoming Computational Intractability in Machine Learning.
	Selected Undergraduate Coursework at Princeton: Interacting with Data, Junior Seminar in High Dimensional Data Analysis, Representation Theory, Integration Theory and Hilbert Spaces, Topology, Algebra II (rings and fields), Data Structures and Algorithms, Analytic Combinatorics, Philosophical Logic, Lagrangian Mechanics, Organic Chemistry.
SERVICE AND LEADERSHIP	**Conference Reviewing** Neural Information Processing Systems (NeurIPS) (Top 400 Reviewer, 2019), Conference on Learning Theory (COLT), International Conference on Machine Learning (ICML), Symposium on the Theorey of Computing (STOC), Artificial Intelligence and Statistics

(AIStats),

Journal Reviewing Journal of Machine Learning Research (JMLR), *Editorial Board*

Workshop Organization Organizer of ICML 2020 Workshop on the Theoretical Foundations of Reinforcement Learning,

OTHER RESEARCH POSITIONS	Research Intern, *Microsoft Research NY*	**June - August 2020**
	Visiting Scholar, *MIT*	**January - June 2020**
	Research Intern, *Microsoft Research NY*	**September - December 2019**
	Visiting Scholar, *Princeton University*	**July - August 2019**