

## Sitan Chen

---

### CONTACT INFORMATION

MIT CSAIL, Room 32-804  
32 Vassar St.  
Cambridge, MA 02139 USA

*Cell:* (678) 763-0775  
*Email:* sitanc@mit.edu  
<http://people.csail.mit.edu/sitanc/>

### RESEARCH INTERESTS

theoretical computer science, machine learning

### POSITIONS

**Harvard University**, John A. Paulson School of Engineering and Applied Sciences  
*Assistant Professor in Computer Science*, starting Fall 2023

**University of California, Berkeley**

*NSF Mathematical Sciences Postdoctoral Research Fellow*, Fall 2021 - present  
Host: Prasad Raghavendra

### EDUCATION

**Massachusetts Institute of Technology**

Ph.D. in Computer Science, September 2021  
Thesis: *Provable Algorithms for Resilient Data Science*  
Advisor: Ankur Moitra

**Harvard University**

A.M. in Mathematics, May 2016  
A.B. in Mathematics and Computer Science *Summa Cum Laude*, May 2016  
Thesis: *Geometry in Algorithms and Complexity*  
Advisors: Profs. Joseph Harris, J.M. Landsberg, and Leslie Valiant  
Received the Thomas T. Hoopes Prize and Captain Jonathan Fay Prize (best thesis)

### HONORS AND AWARDS

NSF Mathematical Sciences Postdoctoral Research Fellowship  
Paul and Daisy Soros Fellowship  
MIT Presidential Fellowship  
New World Mathematics Award, Gold Prize  
Captain Jonathan Fay Prize  
Wister Prize (Harvard mathematics undergraduate with highest record)  
Thomas T. Hoopes Prize  
Derek Bok Center Certificate of Distinction in Teaching  
Phi Beta Kappa  
CRA Outstanding Undergraduate Researcher- Finalist  
John Harvard Scholar  
Davidson Fellowship  
Intel Science Talent Search Finalist  
Siemens Competition National Individ. Finalist (\$40K winner)  
Siemens Competition National Team Finalist (\$30K winner)  
Research Science Institute Scholar, Top Oral Award

### ACADEMIC EXPERIENCE

*Research Intern*, Microsoft Research Redmond, Summer 2019  
Hosted by Jerry Li  
  
*Visiting Graduate Student*, UC Berkeley, Summer 2018  
Hosted by Prasad Raghavendra

## PUBLICATIONS

S. Chen, J. Cotler, R. Huang, J. Li. Exponential Separations Between Learning With and Without Quantum Memory. *Proceedings of the 62nd Annual IEEE Symposium on Foundations of Computer Science (FOCS 2021)*.

S. Chen, F. Koehler, A. Moitra, M. Yau. Online and Distribution-Free Robustness: Regression and Contextual Bandits with Huber Contamination. *Proceedings of the 62nd Annual IEEE Symposium on Foundations of Computer Science (FOCS 2021)*.

S. Chen, A.R. Klivans, R. Meka. Learning Deep ReLU Networks Is Fixed-Parameter Tractable. *Proceedings of the 62nd Annual IEEE Symposium on Foundations of Computer Science (FOCS 2021)*.

S. Chen, A. Moitra. Algorithmic Foundations for the Diffraction Limit. *Proceedings of the 53rd Annual ACM Symposium on Theory of Computing (STOC 2021)*.

S. Chen, Z. Song, D. Zhuo. On InstaHide, Phase Retrieval, and Sparse Matrix Factorization. *International Conference on Learning Representations (ICLR 2021)*.

S. Chen, F. Koehler, A. Moitra, M. Yau. Classification Under Misspecification: Halfspaces, Generalized Linear Models, and Connections to Evolvability. *Advances in Neural Information Processing Systems (NeurIPS 2020, spotlight)*.

S. Chen, J. Li, A. Moitra. Learning Structured Distributions from Untrusted Batches: Faster and Simpler. *Advances in Neural Information Processing Systems (NeurIPS 2020)*.

S. Bubeck, S. Chen, J. Li. Entanglement is Necessary for Optimal Quantum Property Testing. *Proceedings of the 61st Annual IEEE Symposium on Foundations of Computer Science (FOCS 2020)*.

S. Chen, R. Meka. Learning Polynomials of Few Relevant Dimensions. *Proceedings of the 33rd Annual Conference on Learning Theory (COLT 2020)*.

S. Chen, J. Li, Z. Song. Learning Mixtures of Linear Regressions in Subexponential Time via Fourier Moments. *Proceedings of the 52nd Annual ACM Symposium on Theory of Computing (STOC 2020)*.

S. Chen, J. Li, A. Moitra. Efficiently Learning Structured Distributions from Untrusted Batches. *Proceedings of the 52nd Annual ACM Symposium on Theory of Computing (STOC 2020)*.

S. Chen, A. Moitra. Beyond the Low-Degree Algorithm: Mixtures of Subcubes and Their Applications. *Proceedings of the 51st Annual ACM Symposium on Theory of Computing (STOC 2019)*.

S. Chen, M. Delcourt, A. Moitra, G. Perarnau, L. Postle. Improved Bounds for Randomly Sampling Colorings via Linear Programming. *Proceedings of the 29th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2019)*.

S. Chen. Basis Collapse for Holographic Algorithms over All Domain Sizes. *Proceedings of the 48th Annual ACM Symposium on the Theory of Computing (STOC 2016)*.

## MANUSCRIPTS

S. Chen, A. Klivans, R. Meka. Efficiently Learning One Hidden Layer ReLU Networks From Queries.

S. Chen, J. Li, R. O'Donnell. Towards Instance-Optimal Quantum State Certification With Independent Measurements. arxiv:2102.13098

S. Chen, Z. Song, R. Tao, R. Zhang. Symmetric Boolean Factor Analysis with Applications to InstaHide. arxiv:2102.01570

## TALKS

### Online and Distribution-Free Robustness

Simons Institute “Meet the Fellows” Series, September 2021  
Harvard CS Colloquium, March 2021

### Learning Deep ReLU Networks Is Fixed-Parameter Tractable

Northwestern Quarterly Theory Workshop, December 2020  
Simons Institute Workshop: Learning and Testing in High Dimensions, December 2020  
Talks at TTIC, January 2021  
MSR Redmond Machine Learning Foundations Seminar, January 2021  
LIDS Student Conference, January 2021 (received Best Student Talk)  
Collaboration on the Theoretical Foundations of Deep Learning Group Meeting, January 2021  
Frontiers of Parametrized Complexity, March 2021

### Algorithmic Foundations for the Diffraction Limit

MIT ML Tea, June 2020  
ACM Symposium on Theory of Computing, June 2021

### Entanglement is Necessary for Optimal Quantum Property Testing

Workshop on Local Algorithms, July 2020  
IEEE Symposium on Foundations of Computer Science, November 2020

### Learning Polynomials of Few Relevant Dimensions

Conference on Learning Theory, July 2020

### Learning Mixtures of Linear Regressions in Subexponential Time

CSAIL-MIT Trustworthy AI Collaboration Workshop, November 2019  
MIT LIDS Student Conference, January 2020  
ACM Symposium on Theory of Computing, June 2020  
Highlights of Algorithms, August 2020

### Efficiently Learning Structured Distributions from Untrusted Batches

UW Theory Lunch, August 2019  
LIDS & Stats Tea, October 2019  
MIT Center for Deployable Machine Learning Seminar, May 2020  
ACM Symposium on Theory of Computing, June 2020  
Google Research Algorithms Seminar, October 2020

### Beyond the Low-Degree Algorithm: Mixtures of Subcubes and Their Applications

MIT Theory Lunch, November 2017  
MIT Algorithms and Complexity Seminar, May 2018  
ACM Symposium on Theory of Computing, June 2019

### Improved Bounds for Randomly Sampling Colorings via Linear Programming

MIT Theory Lunch, April 2018  
MIT Combinatorics Seminar, October 2018  
ACM-SIAM Symposium on Discrete Algorithms, January 2019  
MSR Machine Learning and Optimization Lunch, August 2019

### Basis Collapse for Holographic Algorithms over All Domain Sizes

National Collegiate Research Conference, January 2016  
Harvard Theory of Computation Seminar, February 2016  
Simons Institute Workshop: The Classification Program of Counting Complexity, March 2016  
ACM Symposium on Theory of Computing, June 2016

SERVICE AND  
OUTREACH

*Program Committees:* ICALP 2022

*Journal Reviewing:* Transactions on Algorithms, SIAM Journal on Computing, Foundations and Trends in Theoretical Computer Science, IEEE Transactions on Information Theory, Mathematics of Operations Research, Quantum

*Conference Reviewing (external):* STOC, FOCS, SODA, NeurIPS, COLT, ITCS, ICALP, ALT

Co-organizer, MIT Algorithms and Complexity Seminar

Co-organizer, MIT Theory Lunch

TEACHING AND  
INDUSTRY  
EXPERIENCE

Teaching Assistant, 6.437 (Information and Inference, graduate), MIT, Spring 2018

Teaching Fellow, CS 221 (Advanced Complexity Theory, graduate), Harvard, Spring 2016

Teaching Fellow, CS 125 (Algorithms and Complexity, undergraduate), Harvard, Fall 2015

Course Assistant, Math 113 (Complex Analysis, undergraduate), Harvard, Spring 2015

Course Assistant, Math 131 (Topology, undergraduate), Harvard, Fall 2014

Teaching Fellow, CS E-124 (Data Structures and Algorithms, ext. school), Harvard, Spring 2014

Course Assistant, Economics 1011a (Microeconomics, undergraduate), Harvard, Fall 2013

Software Engineer Intern, Khan Academy, Summer 2013