

# CHRISTINA LEE YU

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(formerly Christina E. Lee)  
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ACADEMIC POSITIONS     **Cornell University**     *Ithaca, NY*  
Assistant Professor     *July 2018 - current*  
School of Operations Research and Information Engineering, Graduate Field Member in Operations Research, Computer Science, Statistics, and Applied Mathematics

**Microsoft Research New England**     *Cambridge, MA*  
Postdoctoral Researcher     *Sept 2017 - June 2018*

EDUCATION     **Massachusetts Institute of Technology**     *Cambridge, MA*  
Ph.D. in Electrical Engineering and Computer Science     *Sept 2017*  
Thesis: Latent Variable Model Estimation via Collaborative Filtering  
GPA 4.9/5.0

**Massachusetts Institute of Technology**     *Cambridge, MA*  
M.S. in Electrical Engineering and Computer Science     *May 2013*  
Thesis: Computing Stationary Distribution Locally  
GPA 4.9/5.0

**California Institute of Technology**     *Pasadena, CA*  
B.S. in Computer Science     *June 2011*  
GPA 4.0/4.0, Graduated with Honors - ranked 10th out of 235

RESEARCH INTERESTS     Recommendation systems, collaborative filtering, sparse network inference, matrix/tensor estimation, multi-arm bandits, reinforcement learning

PUBLICATION     *(If entry prefaced by \* then authors are ordered alphabetically.)*

## Journal Publications

\*Christian Borgs, Jennifer Chayes, Devavrat Shah, and Christina Lee Yu. "Iterative Collaborative Filtering for Sparse Matrix Estimation." *Operations Research*, 2021.

Sean R. Sinclair, Siddhartha Banerjee, and Christina Lee Yu. "Adaptive Discretization for Episodic Reinforcement Learning in Metric Spaces." *Proceedings of the ACM on Measurement and Analysis of Computing Systems*, 2019. Poster in Neurips Workshop on the Optimization Foundations of Reinforcement Learning, 2019. Accepted for presentation at *ACM SIGMETRICS Conference*, 2020.

\*Yihua Li, Devavrat Shah, Dogyoon Song, and Christina Lee Yu. "Nearest Neighbors for Matrix Estimation Interpreted as Blind Regression for Latent Variable Model." *IEEE Transactions on Information Theory*, 2019.

\*Asuman Ozdaglar, Devavrat Shah, and Christina Lee Yu. “Asynchronous Approximation of a Single Component of the Solution to a Linear System.” *IEEE Transactions on Network Science and Engineering*, 2019.

### Conference Publications

Sean R. Sinclair, Siddhartha Banerjee, and Christina Lee Yu. “Sequential Fair Allocation: Achieving the Optimal Envy-Efficiency Tradeoff Curve.” *ACM SIGMETRICS*, 2022.

\*Christopher Archer, Siddhartha Banerjee, Mayleen Cortez, Carrie Rucker, Sean R. Sinclair, Max Solberg, Qiaomin Xie, and Christina Lee Yu. “ORSuite: Benchmarking Suite for Sequential Operations Models.” *RLNQ SIGMETRICS workshop*, 2021.

Sean R. Sinclair, Gauri Jain, Siddhartha Banerjee, and Christina Lee Yu. “Sequential Fair Allocation of Limited Resources under Stochastic Demands.” *Harvard CRCS AI for Social Good Workshop and Mechanism Design for Social Good Workshop*, 2020.

Sean R. Sinclair, Tianyu Wang, Gauri Jain, Siddhartha Banerjee, and Christina Lee Yu. “Adaptive Discretization for Model-Based Reinforcement Learning.” *Advances in Neural Information Processing Systems*, 2020.

\*Nirandika Wanigasekara and Christina Lee Yu. “Nonparametric Contextual Bandits in an Unknown Metric Space.” *Advances in Neural Information Processing Systems*, 2019.

\*Devavrat Shah and Christina Lee Yu. “Iterative Collaborative Filtering for Sparse Noisy Tensor Estimation.” *Proceedings of Allerton Conference on Communication, Control, and Computing*, 2019.

\*Devavrat Shah and Christina Lee Yu. “Reducing Crowdsourcing to Graphon Estimation, Statistically.” *International Conference on Artificial Intelligence and Statistics*, 2018.

\*Christian Borgs, Jennifer Chayes, Christina E. Lee and Devavrat Shah. “Thy Friend is My Friend: Iterative Collaborative Filtering for Sparse Matrix Estimation.” *Advances in Neural Information Processing Systems*, 2017.

\*Christina E. Lee, Yihua Li, Devavrat Shah and Dogyoon Song. “Blind Regression via Nearest Neighbor under Latent Variable Models: Nonparametric Regression for Latent Variable Models via Collaborative Filtering.” *Advances in Neural Information Processing Systems*, 2016.

\*Christina E. Lee, Asuman Ozdaglar and Devavrat Shah. “Computing the Stationary Distribution Locally.” *Advances in Neural Information Processing Systems*, 2013.

Elizabeth Bodine-Baron, Christina Lee, Anthony Chong, Babak Hassibi and Adam Wierman. “Peer effects and stability in matching markets.” *Proceedings of Sympo-*

*sium on Algorithmic Game Theory*, 2011.

### Preprints and Working Papers

Sean R. Sinclair, Siddhartha Banerjee, and Christina Lee Yu. “Adaptive Discretization for Online Reinforcement Learning.” Under submission.

Sean R. Sinclair, Siddhartha Banerjee, and Christina Lee Yu. “Sequential Fair Allocation: Achieving the Optimal Envy-Efficiency Tradeoff Curve.” Under submission.

\*Devavrat Shah and Christina Lee Yu. “Iterative Collaborative Filtering for Sparse Noisy Tensor Estimation.” Under submission.

Christina Lee Yu. “Tensor Estimation with Nearly Linear Samples Given Weak Side Information.” Under revision.

Christina Lee Yu. “Nonparametric Matric Estimation with Partial Side Information.” Under submission.

Mayleen Cortez, Sean R. Sinclair, Christina Lee Yu. “Neighborhood Expansion for Spiked Tensor PCA.” working paper.

Christina Lee Yu, Edo Airoldi, Christian Borgs, and Jennifer Chayes. “Graph Agnostic Randomized Experimental Design under Heterogeneous Linear Network Interference.” working paper.

PRESENTATIONS “*Adaptive Discretization for Reinforcement Learning in Large Continuous Spaces*”  
University of Michigan Communications and Signal Processing seminar, Nov 2020.  
INFORMS Annual Meeting, Nov 2020.  
UC Berkeley Simons Institute Fellows seminar, Nov 2020.

“*Tensor Estimation with Nearly Linear Samples*”  
Talk at Information Theory and its Applications Conference in San Diego, Feb 2020.

“*Nonparametric Contextual Bandits in an Unknown Metric Space*”  
Invited Talk at INFORMS Annual Meeting, Oct 2019.  
Poster at Neural Information Processing Systems conference, Dec 2019.

“*Adaptive Discretization for Sequential Decision Making in Large Continuous Spaces*”  
Talk at University of Washington Machine Learning Seminar, Oct 2019.  
Talk at Cornell CS Theory Seminar, Nov 2019.  
Lightning Talk at IAS workshop on New Directions in RL and Control, Nov 2019.  
Talk at Cornell AI Seminar, Dec 2019.

“*Matrix and Tensor Estimation in Action*”  
Invited Workshop at Open Data Science Conference, Nov 2019.

“*Predictions for Sparse Datasets*”  
Invited presentation for Operations Research and Information Engineering field

session for CURIE Academy, July 2019.

*“Predictions in Excel through Estimating Missing Values.”*

Invited Workshop at Open Data Science Conference, May 2019.

*“Iterative Collaborative Filtering for Sparse Noisy Tensor Estimation.”*

Invited Talk at Cornell CS SCAN Seminar, Nov 2019.

Invited Talk at Stanford ISL Seminar, Oct 2019.

Talk at Netflix Research, Oct 2019.

Invited Talk at Cornell Probability Seminar, Oct 2019.

Invited Talk at UW Madison SILO colloquium, Sept 2019.

Invited Talk at Allerton Conference, Sept 2019.

Invited Talk at MIT MIFODS workshop, Aug 2019.

Talk at International Symposium on Information Theory, July 2019.

Invited Talk at INFORMS Applied Probability Society Conference, July 2019.

Invited Talk at Machine Learning in Science and Engineering Workshop, June 2019.

Invited Talk at Conference on Information Sciences and Systems, Mar 2019.

Seminar talk at Cornell Statistics, Mar 2019.

Talk at Information Theory and its Applications Conference in San Diego, Feb 2019.

Tutorial on Matrix Estimation at International Symposium on Information Theory, June 2018.

*“Reducing Crowdsourcing to Graphon Estimation, Statistically.”*

Poster at International Conference on Artificial Intelligence and Statistics, Apr 2018.

*“Thy Friend is My Friend: Iterative Collaborative Filtering for Sparse Matrix Estimation.”*

Dantzig Award Finalist presentation at INFORMS Annual Meeting, Nov 2018.

Invited talk at Open Data Science Conference, May 2018.

Talk at California Institute of Technology, Jan 2018.

Poster at Neural Information Processing Systems conference, Dec 2017.

Invited talk at Allerton Conference hosted by UIUC, Oct 2017.

*“Latent Variable Model Estimation via Collaborative Filtering.”*

Invited talk at Summer School for Statistical Physics and Machine Learning in Scientific Institute of Cargese, Aug 2018.

Talk at Harvard University, Nov 2017.

Talk at Northwestern University EECS Seminar, Oct 2017.

*“Social Data Processing with Exchangeable Models: Recommendation Systems, Crowdsourcing, and Graphons.”*

Talk at Microsoft Research New England, Mar 2017.

Talk at Carnegie Mellon University Machine Learning Department, Mar 2017.

Talk at Cornell Operations Research and Information Engineering Dept, Feb 2017.

Poster at Information Theory and its Applications Workshop, Feb 2017.

*“Unifying Framework for Crowd-sourcing via Graphon Estimation.”*

Talk at MIT LIDS Student Conference, Jan 2017.

*“Blind Regression: Nonparametric Regression for Latent Variable Models via Col-*

*laborative Filtering.*”

Poster at Neural Information Processing Systems conference, Dec 2016.

*“Nonparametric Regression for Latent Variable Models”*

Poster at Women in Machine Learning Workshop, Dec 2016.

Poster at Rising Stars Workshop at Carnegie Mellon University, Nov 2016.

*“Blind Regression: Understanding Collaborative Filtering, from Matrix Completion to Tensor Completion”*

Talk at MIT Machine Learning Tea, Oct 2016.

Poster at MIT IDSS Launch Event, Sept 2016.

Poster at New England Machine Learning Day at Microsoft Research, May 2016.

*“Approximating a Single Component of the Solution to a Linear System”*

Talk at Workshop on Graphical Models, Statistical Inference, and Algorithms at University of Minnesota Institute of Mathematics and its Applications, May 2015.

*“Solving Systems of Linear Equations, Locally and Asynchronously”*

Poster at Women in Machine Learning Workshop, Dec 2014.

Talk and poster at MIT LIDS Student Conference, Jan 2015.

*“Computing the Stationary Distribution Locally”*

Poster at Neural Information Processing Systems conference, Dec 2013.

Talk at Stanford SOAL lab meeting, May 2014.

Talk at MIT Machine Learning Tea, Nov 2014.

*“Local Computation of Network Centrality”*

Talk at Workshop on Information and Decision in Social Networks, Nov 2012.

Poster at Women in Machine Learning Workshop, Dec 2012.

Talk at MIT LIDS Student Conference, Jan 2013

Poster at CRA-W Graduate Cohort Workshop, April 2013.

*“Effect of Social Networks on Stable Matchings”*

Talk at Caltech SURF Day, Oct 2010.

## GRANTS

JPMorgan Faculty Research Award, “Exploiting Low Rank Structure for Provably Efficient Reinforcement Learning”, 2020-2021.

National Science Foundation CNS Core: Resource Constrained Reinforcement Learning for Computing Systems, July 2020 - July 2024.

National Science Foundation (CISE) Research Initiation Initiative (CRII): Generalizations for Matrix and Tensor Estimation, July 2020 - July 2022.

## HONORS AND AWARDS

Intel Rising Stars Award 2021

Simons Institute Research Fellow 2021

INFORMS Dantzig Dissertation Award Honorable Mention 2018

EECS Rising Star 2016

Claude E. Shannon Research Assistantship 2016-17

NSF Graduate Research Fellowship 2013-16

LIDS Student Conference Best Student Presentation 2013

MIT Irwin Mark Jacobs and Joan Klein Jacobs Presidential Fellowship 2011-12

	Caltech Perpall Speaking Competition Semifinalist	2010
	National Merit Scholarship Finalist and Recipient	2008
	Caltech Signature Award	2007
PROFESSIONAL SERVICES	Guest editor for IEEE Journal on Selected Areas in Information Theory special issue on estimation and inference	2020
	Reviewer for SIAM Journal on Mathematics of Data Science (SIMODS)	2019, 2021
	Reviewer for Journal of Computational and Graphical Statistics (JCGS)	2019
	Reviewer for National Science Foundation	2019, 2020
	Reviewer for Management Science Journal	2019, 2020, 2021
	Reviewer for Operations Research Journal	2018, 2020
	Reviewer for Stochastic Systems Journal	2020
	Reviewer for Springer Machine Learning Journal	2021
	Reviewer for ACM Symposium on Theory of Computing (STOC)	2019
	Reviewer for IEEE Transactions on Information Theory	2015, 2019, 2021
	Reviewer for International Conference on Artificial Intelligence and Statistics (AISTATS)	2018, 2019
	Reviewer for Journal of Machine Learning Research	2018, 2019, 2020, 2021
	Reviewer for International Conference on Machine Learning	2018, 2020
	Program Committee member for International Conference on Machine Learning Workshops	2020
	Reviewer for Neural Information Processing Systems Conference	2016, 2018, 2019, 2020
	Reviewer for AAAI Conference on Artificial Intelligence	2019
	Program Committee member for International Joint Conferences on Artificial Intelligence (IJCAI)	2019
	Reviewer for Asian Conference on Machine Learning (ACML)	2019
	Reviewer for International Symposium on Theoretical Aspects of Computer Science	2017
	Reviewer for IEEE International Symposium on Information Theory	2017, 2020, 2021
	Reviewer for IEEE Transactions on Network Science and Engineering	2016
	Reviewer for Women in Machine Learning Workshop	2016
	Stochastic Networks, Applied Probability, and Performance (SNAPP) seminar organizing committee	2020-2021
	Cornell ORIE Diversity Committee Member	2021-current
	Cornell ORIE Faculty Search Committee Member	2020-2021
	Cornell CAM PhD Admissions Committee Member	2020
	Cornell freshman adviser	2019-2020
	Session organizer for INFORMS Annual Meeting	2019
	Co-organizer for ORIE colloquium	2018-current
	Co-chair for Women in Information Theory Society (WITHITS)	2019-current
	Co-organizer for NIPS Workshop on Nearest Neighbor Methods	2017
	Co-coordinator for LIDS student conference	2014-2015
	Lab for Information and Decision Systems Student Committee	2011-2015
	Coordinator for <i>Facing Challenges, Overcoming Obstacles</i> Event as part of GWAMIT Spring Empowerment conference.	March 2012

TEACHING	Systems Analysis, Behavior, and Optimization (SYSEN 5200)	Spring 2020, 2021
EXPERIENCE	Information Systems and Analysis (ORIE 3800)	Spring 2019
	Statistical Principles (ORIE 6700)	Fall 2018, 2019
	Algorithms for Inference (6.438), Teaching Assistant	Fall 2015
	MIT Teaching Certificate Program	Summer 2015
	Design and Analysis of Algorithms (6.046)	Teaching Assistant, Fall 2013
	Intro to Computer Science (CS1) and Python and C (CS11)	Dean's Tutor, 2009-10
	Introduction to Computer Science (CS1), Teaching Assistant	Fall 2008