Christina Lee Yu

(formerly Christina E. Lee)
https://cleeyu.orie.cornell.edu/
cleeyu@cornell.edu

ACADEMIC POSITIONS	**Cornell University** Assistant Professor School of Operations Research and Information Engineering, Graduate Field Member in Operations Research, Computer Science, Statistics, and Applied Mathematics	*Ithaca, NY* *July 2018 - current*
	Microsoft Research New England Postdoctoral Researcher	*Cambridge, MA* *Sept 2017 - June 2018*
EDUCATION	**Massachusetts Institute of Technology** Ph.D. in Electrical Engineering and Computer Science Thesis: Latent Variable Model Estimation via Collaborative Filtering GPA 4.9/5.0	*Cambridge, MA* *Sept 2017*
	Massachusetts Institute of Technology M.S. in Electrical Engineering and Computer Science Thesis: Computing Stationary Distribution Locally GPA 4.9/5.0	*Cambridge, MA* *May 2013*
	California Institute of Technology B.S. in Computer Science GPA 4.0/4.0, Graduated with Honors - ranked 10th out of 235	*Pasadena, CA* *June 2011*
RESEARCH INTERESTS	Matrix/tensor estimation, multi-arm bandits, reinforcement learning theory, causal inference under network interference, sparse network inference	
PUBLICATION	(*If entry prefaced by * then authors are ordered alphabetically.*)	

Journal Publications

Sean R. Sinclair, Siddhartha Banerjee, and Christina Lee Yu. "Adaptive Discretization for Online Reinforcement Learning." *Arxiv:2110.15843*, 2022. To appear in *Operations Research*.

Sean R. Sinclair, Siddhartha Banerjee, and Christina Lee Yu. "Sequential Fair Allocation: Achieving the Optimal Envy-Efficiency Tradeoff Curve." *Arxiv:2105.05308*, 2021. To appear in *Operations Research*. Finalist for 2022 INFORMS Diversity, Equity, and Inclusion Student Paper Competition.

Christina Lee Yu and Xumei Xi. "Tensor Estimation with Nearly Linear Samples Given Weak Side Information." *Proceedings of the ACM on Measurement and Analysis of Computing Systems*, 2022. Accepted for presentation at *ACM SIGMETRICS Conference,* 2022.

*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

Mayleen Cortez, Matthew Eichhorn, and Christina Lee Yu. "Staggered Rollout Designs Enable Causal Inference Under Interference Without Network Knowledge." *Arxiv:2205.14552*, 2022. To apppear in *NEURIPS*.

Christina Lee Yu. "Nonparametric Matrix Estimation with with One-Sided Covariates." *International Symposium on Information Theory*, 2022.

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 Symposium on Algorithmic Game Theory*, 2011.

Preprints

Siddhartha Banerjee, Sean R. Sinclair, Milind Tambe, Lily Xu, Christina Lee Yu. "Artificial Replay: A Meta-Algorithm for Harnessing Historical Data in Bandits." *Arxiv:2210.00025*, 2022.

Mayleen Cortez, Matthew Eichhorn, and Christina Lee Yu. "Exploiting Neighborhood Interference with Low Order Interactions under Unit Randomized Design." *Arxiv:2208.05553*, 2022.

Tyler Sam, Yudong Chen, and Christina Lee Yu. "Overcoming the Long Horizon Barrier for Sample-Efficient Reinforcement Learning with Latent Low-Rank Structure." *Arxiv:2206.03569*, 2022. Received Best Poster Award in *SIGMETRICS* 2022.

Christina Lee Yu, Edo Airoldi, Christian Borgs, and Jennifer Chayes. "Estimating Total Treatment Effect in Randomized Experiments with Unknown Network Structure." *Arxiv:2205.12803*, 2022.

Chunyin (Alex) Siu, Gennady Samorodnitsky, Christina Lee Yu, Andrey Yao. "Detection of Small Holes by the Scale-Invariant Robust Density-Aware Distance (RDAD) Filtration." *Arxiv:2204.07821*, 2022.

*Devavrat Shah and Christina Lee Yu. "Robust Max Entrywise Error Bounds for Sparse Tensor Estimation via Similarity Based Collaborative Filtering." *Arxiv:1908.01241*, 2021.

GRANTS   JPMorgan Faculty Research Award, "Exploiting Low Rank Structure for Provably Efficient Reinforcement Learning", $100K, 2021-2022.
National Science Foundation CNS Core: Resource Constrained Reinforcement Learn-

ing for Computing Systems, $1,200K, July 2020 - July 2024.
National Science Foundation (CISE) Research Initiation Initiative (CRII): Generalizations for Matrix and Tensor Estimation, $175K, July 2020 - July 2022.

HONORS AND AWARDS	Ralph S. Watts '72 Excellence in Teaching Award	2022
	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

PRESENTATIONS

"Nonparametric Matrix Estimation with with One-Sided Covariates
Talk at International Symposium of Information Theory, June 2022.

"Tensor Estimation with Nearly Linear Samples Given Weak Side Information
Talk at SIGMETRICS June 2022.

"Efficiently Exploiting Model Structure in Network Causal Inference with and without Knowledge of the Network
Talk at Simons Graph Limits workshop, Sept 2022.
Talk at MIT Operations Research Center Seminar, Oct 2022.

"Causal Inference in the Presence of Network Interference
Tutorial at CORS/INFORMS International Conference, June 2022.

"Graph Agnostic Randomized Experimental Design under Heterogeneous Linear Network Interference and Beyond
Talk at INFORMS Annual meeting, Oct 2022.
Talk at Stochastic Networks conference, June 2022.
Talk at Cornell Econometrics workshop, Apr 2022.

"Simple yet Efficient Graph Agnostic Estimators for Network Causal Inference - from Linear to Low Degree Polynomial Models
Talk at Stanford Research on Algorithms and Incentives in Networks (RAIN) seminar, Mar 2022.

"Overcoming the Long Horizon Barrier for Sample-Efficient Reinforcement Learning with Latent Low-Rank Structure"
Talk at SIAM Conference on Mathematics of Data Science, Sept 2022.
Talk at Stochastic Networks, Applied Probability, and Performance (SNAPP) seminar, Feb 2022.
Talk at Cornell Foundations of Information, Networks, and Decision Systems (FIND) seminar, Feb 2022.
Talk at Conference on Information Sciences and Systems, Mar 2022.

Talk at Information Theory and its Applications, May 2022.

"*Exploiting Structure In Reinforcement Learning*"
Talk at Theory of Reinforcement Learning Reunion Workshop at Simons Institute, Nov 2021.

"*Graph Agnostic Randomized Experimental Design under Heterogeneous Linear Network Interference*"
Simons Institute Workshop on Algorithmic Aspects of Causal Inference Mar 2022.
Talk at INFORMS Annual Meeting, Oct 2021.

"*Sequential Fair Allocation: Achieving the Optimal Envy-Efficiency Tradeoff Curve*"
LIONS seminar, Sept 2022.
Symposium on Foundations of Responsible Computing, June 2022.
Talk at Simons TOC4Fairness Seminar, Nov 2021.
Talk at IFDS Ethics & Algorithms Special Interest Group, Nov 2021.
Talk at Sharif University of Technology, Industrial Engineering Department Seminar, Aug 2021.
Talk at Harvard Probabilitas seminar, July 2021.

"*Adaptive Discretization for Reinforcement Learning in Large Continuous Spaces*"
Talk at University of Michigan Communications and Signal Processing seminar, Nov 2020.
Talk at INFORMS Annual Meeting, Nov 2020.
Talk at 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, Crowd-sourcing, 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 Collaborative 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.

PROFESSIONAL SERVICES		
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-current
Cornell CAM PhD Admissions Committee Member		2020
Cornell freshman adviser		2019-2020
Session organizer for INFORMS Annual Meeting		2019
Co-organizer for ORIE colloquium		2018-2020
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 *Facing Challenges, Overcoming Obstacles* Event as part of GWAMIT Spring Empowerment conference.		March 2012

Guest editor for IEEE Journal on Selected Areas in Information Theory special issue on estimation and inference, 2020

Technical Program committee member for
- ACM SIGMETRICS / IFIP Performance 2022

- IFIP Performance 2021

- ACM Conference on Equity and Access in Algorithms, Mechanisms, and Op-

timization 2021

- International Joint Conferences on Artificial Intelligence (IJCAI) , 2019

- International Conference on Machine Learning Workshops , 2020

Reviewer for

- SIAM Journal on Mathematics of Data Science (SIMODS) , 2019, 2021

- Journal of Computational and Graphical Statistics (JCGS) , 2019

- National Science Foundation , 2019, 2020

- Management Science , 2019, 2020, 2021

- Operations Research , 2018, 2020

- Stochastic Systems , 2020

- Springer Machine Learning Journal , 2021

- IEEE Transactions on Information Theory , 2015, 2019, 2021

- Journal of Machine Learning Research (JMLR) , 2018, 2019, 2020, 2021

- IEEE Transactions on Network Science and Engineering , 2016

- IEEE/ACM Transactions on Networking , 2021

- ACM Symposium on Theory of Computing (STOC) , 2019

- International Conference on Artificial Intelligence and Statistics (AISTATS) , 2018, 2019, 2021

- International Conference on Machine Learning , 2018, 2020

- Reviewer for Neural Information Processing Systems Conference , 2016, 2018, 2019, 2020

- Reviewer for AAAI Conference on Artificial Intelligence , 2019

- Asian Conference on Machine Learning (ACML) , 2019

- International Symposium on Theoretical Aspects of Computer Science , 2017

- IEEE International Symposium on Information Theory , 2017, 2020, 2021

- Women in Machine Learning Workshop , 2016

TEACHING EXPERIENCE		
Systems Analysis, Behavior, and Optimization (SYSEN 5200)		Spring 2020, 2021
Information Systems and Analysis (ORIE 3800)		Spring 2019
Statistical Principles (ORIE 6700)		Fall 2018, 2019, 2021
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