SOPHIE H. YU

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The Wharton School ⋄ University of Pennsylvania
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RESEARCH INTERESTS

Operations research, applied probability, high-dimensional statistics, network science, information theory

EDUCATION

Ph.D. in Decision Sciences — Aug 2018 - May 2023
The Fuqua School of Business, Duke University
Advisor: Prof. Jiaming Xu and Prof. Yehua Wei

M.S. in Statistical and Economic Modeling — Aug 2015 - Dec 2017
Department of Statistical Science and Department of Economics, Duke University
Advisor: Prof. Jerome P. Reiter

B.S. in Economics, Public Finance — Aug 2011 - May 2015
The School of Finance, Renmin University of China

WORK EXPERIENCE

The Wharton School, University of Pennsylvania — July 2024 – Present
Assistant Professor

Department of Management Science and Engineering, Stanford University — Aug 2023 – June 2024
Postdoctoral Scholar
Advisors: Prof. Itai Ashlagi and Prof. Amin Saberi

Simons Institute for the Theory of Computing, UC Berkeley — Aug 2021 – Dec 2021
Visiting Ph.D. student
Under the program "Computational Complexity of Statistical Inference"

Rhodes Information Initiative, Duke University — June 2021 – Aug 2021
Research Project Manager & Students Mentor (3 undergraduate students)
Research project "Detecting and Matching Similar Networks "

PREPRINTS AND PUBLICATIONS

1. Taha Ameen, Flore Sentenac, Sophie H. Yu
   "Flexibility allocation in random bipartite graphs: matching rates and dominance regimes."
2. Jinho Bok, Shuangping Li, Sophie H. Yu
   "Detection of local geometry in random graphs: information-theoretic and computational limits."
3. Taha Ameen, Flore Sentenac, Sophie H. Yu
   "A uniformity principle for spatial matching."
4. Suleyman Kerimov, Pengyu Qian, Mingwei Yang and Sophie H. Yu
   "Availability is All You Need: Optimal Regret Scaling via Greedy Policies,"

5. Maxwell Allman, Itai Ashlagi, Amin Saberi, and Sophie H. Yu
"From signaling to interviews in random matching markets,"
— A short version accepted to *The 57th ACM Symposium on Theory of Computing (STOC)*, 2025

6. Siqi He, Yehua Wei, Jiaming Xu, and Sophie H. Yu
"Online Resource Allocation without Re-solving: The Effectiveness of Primal-Dual Policies,"
Major revision at *Operations Research*, 2026

7. Yehua Wei, Jiaming Xu, and Sophie H. Yu
"Constant regret primal-dual policy for multi-way dynamic matching,"
Accepted at *Management Science*, 2025
— A short version accepted to *ACM SIGMETRICS*, 2023

8. Mingwei Yang and Sophie H. Yu
"Online metric matching: beyond the worst case,"
Operations Research, 2025.1646, Nov 2025
— A short version accepted to *The 20th Conference on Web and Internet Economics (WINE)*, 2024

9. Cheng Mao, Yihong Wu, Jiaming Xu, and Sophie H. Yu
"Random graph matching at Otter's threshold via counting chandeliers,"
Operations Research, 2023.0574, Sep 2025
— A short version accepted to *The 55th ACM Symposium on Theory of Computing (STOC)*, 2023

10. Cheng Mao, Yihong Wu, Jiaming Xu, and Sophie H. Yu
"Testing network correlation efficiently via counting trees,"
Annals of Statistics, 52.6: 2483-2505, Dec 2024
— *INFORMS 2022 George Nicholson Student Paper Competition Finalist*, 2022

11. Yihong Wu, Jiaming Xu, and Sophie H. Yu
"Testing correlation of unlabelled random graphs,"
The Annals of Applied Probability 33(4), 2519-2558, Aug 2023

12. Yihong Wu, Jiaming Xu, and Sophie H. Yu
"Settling the Sharp Reconstruction Thresholds of Random Graph Matching,"
IEEE Transactions on Information Theory, vol. 68, no. 8, pp. 5391-5417, Aug 2022
— A short version appears at *IEEE International Symposium on Information Theory* (ISIT), 2021

13. Haoyang Yu, and Jerome P. Reiter
"Differentially Private Verification of Regression Predictions from Synthetic Data,"
Transactions on Data Privacy, 11 (2018) 279–297

TALKS

1. "A uniformity principle for spatial matching"
   - INFORMS Annual Meeting, Oct, 2025
   - University of Pennsylvania, CS Theory Seminar, Oct, 2025
2. "From signaling to interviews in random matching markets"
   - Stanford University, Guest lecture, Nov, 2025
   - Allerton Conference, Sep, 2025
   - INFORMS Applied Probability Society Conference, July, 2025
   - The 57th ACM Symposium on Theory of Computing (STOC), June, 2025

- Marketplace Innovations Workshop, May, 2025
- OM in the Wild Workshop, May, 2025
- The University of Texas at Austin, Operations Research and Industrial Engineering, Jan, 2025
- Rotman Young Scholar Seminar Series, 2024
- INFORMS Annual Meeting, Oct, 2024
- Institut de Mathématiques de Toulouse (IMT), Online Stochastic Matching, Sep, 2024

3. "Online Resource Allocation without Re-solving: The Effectiveness of Primal-Dual Policies"
   - INFORMS Revenue Management and Pricing, July, 2025
4. "Constant regret primal-dual policy for multi-way dynamic matching"
   - INFORMS Applied Probability Society Conference, July, 2025
   - University of Pennsylvania, Optimization Seminar, Dec, 2024.
   - Stanford University, MS&E, Rain Seminar, Apr, 2024
   - London Business School, Mar, 2024
   - Shanghai Jiao Tong University, Antai, Jan, 2024
   - INFORMS Annual Meeting, Oct, 2023
   - ACM SIGMETRICS, June, 2023
   - Marketplace Innovations Workshop, May, 2023
5. "Random graph matching at Otter's threshold via counting chandeliers"
   - INFORMS Applied Probability Society Conference, June, 2023.
   - The 55th ACM Symposium on Theory of Computing (STOC), June, 2023.
   - MIT FODSI Computational Complexity of Statistical Problems Workshop, June, 2023.
   - University of California, Davis, Probability Seminar, May, 2023.
   - Stanford University, GSB, OIT Seminar, Feb, 2023.
   - Columbia University, IEOR Seminar, Feb, 2023.
   - Duke University, Computer Science Algorithm Seminar, Jan, 2023.
   - University of Southern California, Marshall, Operations Seminar, Jan, 2023.
   - University of Southern California, Marshall, Statistics Seminar, Jan, 2023.
   - Northwestern University, Statistics Seminar, Jan, 2023.
   - University of Chicago, Booth, Operations Management Seminar, Jan, 2023.
   - Northwestern University, Kellogg, Operations Seminar, Dec, 2023.
   - Cornell University, Ithaca, ORIE Seminar, Dec, 2022.
   - Cornell Tech, ORIE Seminar, Dec, 2022.
   - Emory University, Goizueta, ISOM Seminar, Dec, 2022.
   - Georgia Institute of Technology, ISyE Seminar, Dec, 2022.
   - University of Pennsylvania, Wharton, OID Seminar, Dec, 2022.

- University of Southern California, Viterbi School of Engineering, ISE Seminar, Nov, 2022.
- University of California, Davis, GSM, Business Analytics Seminar, Nov, 2022.
- INFORMS Annual Meeting, session TB41, Indianapolis, IN, Oct, 2022.
- Cornell University, Cornell ORIE Young Researchers Workshop, Oct, 2022.

6. "Testing network correlation efficiently via counting trees"
   - INFORMS Annual Meeting, George Nicholson Student Paper Competition, Indianapolis, IN, Oct, 2022.
7. "Random Graph Matching: the Fundamental Limit and Efficient Algorithms"
   - Duke University, the Fuqua School of Business, Interdisciplinary Seminar, Jan, 2022.
   - UC Berkeley, Simons Computational Complexity of Statistical Inference Student Seminar, Nov, 2021.
8. "Detection And Recovery Thresholds For Graph Matching,"
   - INFORMS Annual Meeting, session WC08, Anaheim, CA, Oct, 2021.
9. "Settling the Sharp Reconstruction Thresholds of Random Graph Matching,"
   - IEEE International Symposium on Information Theory conference, July, 2021.
10. "Random Graph Matching: the Fundamental Limit and Efficient Algorithms" (Poster)
    - IEEE North American School of Information Theory, Aug, 2022.
    - INFORMS Applied Probability Society, Stochastic Networks, June, 2022
    - NYC Operations Day, April, 2022.
    - Simons Computational Complexity of Statistical Inference and NSF AI Institute for Foundations of Machine Learning, UC Berkeley, Nov, 2021.

TEACHING EXPERIENCE

Instructor, EGRMGMT-580 Decision Models, Duke University	Spring 2022
(Overall Instructor Evaluation: 4.82/5.00, Response rate: 18/21, Department mean: 4.38/5.00)	
TA, PhD BA 915/STA 715/MATH 742: Stochastic Models, Duke University	Fall 2022
TA, PhD BA 990/ECE 590: Statistical Inference on Graphs, Duke University	Spring 2022
TA, PhD BA 910/Statistics 502: Bayesian Inference, Duke University	Spring 2021
TA, Weekend MBA Decision 611: Decision Models, Duke University	Fall 2022
TA, MBA Decision 516: Quantitative Business Analysis, Duke University	Fall 2020
TA, MBA Decision 521Q: Quantitative Business Analysis, Duke University	Fall 2020
TA, MQM Decision 518Q: Applied Probability and Statistics, Duke University	Fall 2019
TA, MQM Decision 521Q: Decision Analytics and Modeling, Duke University	Spring 2019
TA, ECON 618: Advanced Econometrics, Duke University	Fall 2016

PROFESSIONAL SERVICE

- Conferences and workshops:

- Co-chair, " Applied Probability in Algorithmic and Operational Networks I," INFORMS Annual Meeting, Oct, 2025
- Co-chair, " Applied Probability in Algorithmic and Operational Networks II," INFORMS Annual Meeting, Oct, 2025
- Co-chair, "Dynamic Matching and Resource Allocation," INFORMS Annual Meeting, Oct, 2025
- Tutorial, "Matching in Networks: Fundamental Limits and Efficient Algorithms," ACM SIGMETRICS, 2024
- Chair, "Stochastic Models and Optimization in Service Systems: Matching, Pricing, Scaling, And Planning," INFORMS Annual Meeting, Oct, 2024
- Co-chair, "Matching Markets," INFORMS Annual Meeting, Oct, 2024
- Chair, "Online & Dynamic Matching: Innovative Approaches," INFORMS Annual Meeting, Oct, 2023
- Co-Chair, "Matchings in Random Graphs," INFORMS Annual Meeting, Oct, 2022

– Reviewer:

- Journals: Operations Research, Management Science, Mathematics of Operations Research, Annals of Statistics, Annals of Applied Probability, IEEE Transactions on Information Theory, Bernoulli, Electronic Journal of Statistics, Electronic Journal of Statistics
- Conferences: ACM Conference on Economics and Computation (EC), ACM-SIAM Symposium on Discrete Algorithms (SODA), Conference on Learning Theory (COLT), IEEE International Symposium on Information Theory (ISIT), Conference on Neural Information Processing Systems (NeurIPS)

AWARDS AND HONORS

Thomas M. Cover Dessertation Award, IEEE Information Theory Society,	2024
Best Dissertation Award, Fuqua School of Business	2023
Finalist for George Nicholson Student Paper Competition at INFORMS	2023
Duke University Ph.D. Fellowship	2018-2023
Duke Graduate Merit Scholar Award	2015-2017
Duke Economics Master's Scholar Award	2015-2017
Renmin University Academic Scholarships	2011-2015
Renmin University Outstanding Student Awards	2011-2015