

# Yuhao Wang

website <https://yuhaow.github.io>

## APPOINTMENTS

### *Assistant Professor*

Institute of Interdisciplinary Information Sciences, Tsinghua University, Beijing, China 08/2020 - present

### *Research Affiliate*

Shanghai Qi Zhi Institute, Shanghai, China 08/2020 - present

### *Research Associate*

Statistical Laboratory, University of Cambridge, Cambridge, UK 08/2019 - 07/2020  
Advisor: Professor Rajen Shah

## EDUCATION

### *Doctor of Philosophy*

Department of EECS, Massachusetts Institute of Technology, Cambridge, MA, USA 06/2019  
Advisor: Professor Caroline Uhler

### *Master of Science*

Department of EECS, Massachusetts Institute of Technology, Cambridge, MA, USA 06/2016  
Advisor: Professor Bonnie Berger

### *Bachelor of Engineering*

Department of Automation, Tsinghua University, Beijing, China 07/2014

## MAIN RESEARCH INTERESTS

*causal inference, high-dimensional statistics, experimental design.*

## AWARDS

Forbes China 30 under 30 (2021) 09/2021

## PUBLICATIONS

(\*: equal contribution or alphabetical order)

### Submitted for Review

- **Y. Wang**, Pengkun Yang and Alexandre B. Tsybakov. *Minimax estimation of functionals in sparse vector model with correlated observations*, preprint arXiv:2407.14778
- **Y. Wang** and Xinran Li. *Asymptotic theory of the best-choice rerandomization using the Mahalanobis distance*, minor revision at Journal of Econometrics, preprint arXiv:2312.02513
- Xin Lu, Fan Yang and **Y. Wang**. *Debiased regression adjustment in completely randomized experiments with moderately high-dimensional covariates*, major revision at the Annals of Statistics, preprint arXiv:2309.02073
- Lin Liu\* and **Y. Wang**\*. *Root-n consistent semiparametric learning with high-dimensional nuisance functions under minimal sparsity*, preprint arXiv:2305.04174
- Kaiyue Wen\*, Tengyao Wang\* and **Y. Wang**. *Residual permutation test for high-dimensional regression coefficient testing*, major revision at the Annals of Statistics, preprint arXiv:2211.16182
- **Y. Wang**\*, Weiming Zhu\*. *Profit-driven experimental design*, preprint at SSRN:<https://ssrn.com/abstract=3896229>

## Referred Publications

- Guido Imbens\*, Nathan Kallus\*, Xiaojie Mao\*, **Y. Wang\***. *Long-term causal inference under persistent confounding via data combination*, Journal of the Royal Statistical Society, Series B (accepted).
- **Y. Wang**, Rajen D. Shah. *Debiased inverse propensity score weighting for estimation of average treatment effects with high-dimensional confounders*, The Annals of Statistics (accepted).
- **Y. Wang**, Xinran Li. *Rerandomization with diminishing covariate imbalance and diverging number of covariates*, The Annals of Statistics 50.6 (2022): 3439-3465.
- Madeline Navarro, **Y. Wang**, Antonio G. Marques, Caroline Uhler and Santiago Segarra. *Joint inference of multiple graphs from matrix polynomials*, Journal of Machine Learning Research 23.76 (2022): 1-35.
- Alexandra Carpentier\*, Olivier Collier\*, Laetitia Comminges\*, Alexandre B. Tsybakov\*, **Y. Wang\***. *Estimation of the  $\ell_2$ -norm and testing in sparse linear regression with unknown variance*, Bernoulli 28.4 (2022): 2744-2787.
- Liam Solus, **Y. Wang**, Caroline Uhler. *Consistency guarantees for greedy permutation-based causal inference algorithms*, Biometrika 108.4 (2021): 795-814.
- **Y. Wang**, Uma Roy, Caroline Uhler. *Learning High-dimensional Gaussian Graphical Models under Total Positivity without Adjustment of Tuning Parameters*, International Conference on Artificial Intelligence and Statistics, Virtual online, Aug. 26-28, 2020.
- Basil Saeed, Anastasiya Belyaeva, **Y. Wang**, Caroline Uhler. *Anchored causal inference in the presence of measurement error*, UAI 2020.
- Chandler Squires, **Y. Wang**, Caroline Uhler. *Permutation-based causal structure learning with unknown intervention targets*, UAI 2020.
- **Y. Wang**, Santiago Segarra, Caroline Uhler. *High-dimensional joint estimation of multiple directed Gaussian graphical models*, Electronic Journal of Statistics 14.1 (2020): 2439-2483.
- Alexandra Carpentier\*, Olivier Collier\*, Laetitia Comminges\*, Alexandre B. Tsybakov\*, **Y. Wang\***. *Minimax rate of testing in sparse linear regression*, Automation and Remote Control 80.10 (2019): 1817-1834. (special issue in memory of Yakov Tsybakin)
- **Y. Wang**, Chandler Squires, Anastasiya Belyaeva, Caroline Uhler. *Direct estimation of differences in causal graphs*, NeurIPS 2018.
- **Y. Wang**, Liam Solus, Karren D. Yang, Caroline Uhler. *Permutation-based causal inference algorithms with interventions*, NeurIPS 2017.
- Santiago Segarra, **Y. Wang**, Caroline Uhler, Antonio G Marques. *Joint inference of networks from stationary graph signals*, Asilomar Conference on Signals, Systems, and Computers 2017.
- Yaron Orenstein, **Y. Wang**, Bonnie Berger. *RCK: accurate and efficient inference of sequence and structure-based protein-RNA binding models from RNAcompete data*, Bioinformatics 32.12 (2016): i351-i359.
- Xin He\*, A. Ercument Cicek\*, **Y. Wang\***, Marcel H. Schulz, Hai-Son Le, Ziv Bar-Joseph. *De novo ChIP-seq analysis*, Genome biology 16.1 (2015): 205.
- **Y. Wang**, Jianyang Zeng, *Predicting drug-target interactions using restricted Boltzmann machines*, Bioinformatics 29.13 (2013): i126-i134.

## TEACHING EXPERIENCE

<b>Course Instructor</b> 30470303-0 Probability and Statistics (English), Tsinghua University	09/2020 -
<b>Course Instructor</b> 80470282-0 Advanced Topics in Causal Inference (English), Tsinghua University	02/2021 -
<b>Teaching Assistant</b> 6.867 Machine Learning, Massachusetts Institute of Technology	09/2016 – 01/2017

## INTERNSHIP EXPERIENCE

<b>Student Intern</b> School of Computer Science, Carnegie Mellon University. Advisor: Professor. Ziv Bar-Joseph	07/2013 – 08/2013
<b>Undergraduate Research Assistant</b> Institute for Interdisciplinary Information Sciences, Tsinghua University. Advisor: Professor Jianyang Zeng	2012.9 – 2013.3

## CONFERENCES AND INVITED TALKS

Root-n consistent estimators for average treatment effect with minimal sparsity, Online Causal Inference Seminar (virtual). - Discussant: Professor Rajarshi Mukherjee (Harvard University)	05/2023
Residual permutation test for high-dimensional regression coefficient testing, Statistics and Data Science Seminar Series, London School of Economics, London, UK	05/2024
Meetings in Mathematical Statistics, C.I.R.M., Marseille, France	12/2023
Seminar at Statistical Laboratory, University of Cambridge, Cambridge, UK	09/2023
Seminar at Department of Statistics, University of Warwick, Coventry, UK	09/2023
International Seminar on Selective Inference (virtual). - Discussant: Professor Panos Toulis (University of Chicago)	02/2023
Statistics and Data Science Seminar, Center for Statistical Science, Peking University, Beijing, China (virtual).	12/2022
Long-term causal inference under persistent confounding via data combination, Workshop on complex time series analysis, TSIMF, Sanya, China.	01/2024
Algebraic economics workshop, IMSI, Chicago, USA.	11/2023
CMStatistics, London, UK (virtual). - Session Chair: Professor Lin Liu (Shanghai Jiaotong University)	12/2022
IIM Seminar, HKU Business School, University of Hong Kong, Hong Kong, China (virtual).	06/2022
Forum on Frontiers in Statistics and Data Analysis, Xiamen University and Tianyuan Mathematical Center in Southeast China, Xiamen, Fujian, China (virtual).	04/2022
Tsinghua Logic Salon, Tsinghua University, Beijing, China.	04/2022
Debiased inverse propensity score weighting for estimation of average treatment effects with high-dimensional confounders, Joint Econometrics and Statistics Seminar Series, the London School of Economics and Political Sci- ence, London, UK (virtual).	02/2022
Seminar at School of Mathematical Sciences, Shanghai Jiao Tong University, Shanghai, China.	07/2021
Young Data Science Researcher Seminar, ETH Zurich, Zurich, Switzerland (virtual).	06/2021

Seminar at Center for Statistical Science, Tsinghua University, Beijing, China.	03/2021
Hong Kong Machine Learning Meetup, Hong Kong, China (virtual).	02/2021
Seminar of Statistics at ENSAE-CREST, Paris, France (virtual).	11/2020
Pacific Causal Inference Conference, Peking University, Beijing, China (virtual).	09/2020
Discussion of “A machine learning approach for causal structure estimation in high dimensions”, Online Causal Inference Seminar (virtual).	01/2022
Profit-driven experimental design, Informs 2021 Invited Session Experiments and Computational Social Science, Anaheim, CA, USA (virtual).	10/2021
Shanghai Jiao Tong University Summer School, Shanghai, China.	07/2021
Learning high-dimensional Gaussian graphical models under total positivity without tuning parameters, Machine Learning Theory Workshop, Peking University, Beijing, China.	06/2019
Seminar at Barcelona Graduate School of Economics, Barcelona, Spain.	05/2019
Provable algorithms for statistical challenges in data driven decision making, Seminar at Krannert School of Management, Purdue University, West Lafayette, IN, USA.	02/2019
Seminar at iDDA, The Chinese University of Hong Kong (Shenzhen), Shenzhen, China.	01/2019
Seminar at IIIS, Tsinghua University, Beijing, China.	12/2018
Direct estimation of differences in causal graphs, International Conference of the ERCIM WG on Computational and Methodological Statistics (CM- Statistics), Pisa, Italy. - Session Chair: Professor Marloes Maathuis (ETH Zurich)	12/2018
Robust estimation of high-dimensional graphical models under total positivity, MIT Applied Algebra Day, Cambridge, MA, USA.	11/2018
Permutation-based causal inference algorithms with interventions, NeurIPS spotlight presentation, Long Beach, CA, USA.	12/2017

## ACADEMIC SERVICE

### Editorial board reviewer

Journal of Machine Learning Research 2020 - present

### Journal reviewer

Annals of Statistics; Biometrika; Journal of the American Statistical Association; Journal of Machine Learning Research; Biometrics; SIAM Journal on Mathematics of Data Science etc.

### Conference organizing committee

IJCAI 2021; AAAI 2023

### Conference reviewer

ICML 2018; NeurIPS 2018; ICML 2019; NeurIPS 2019; AAAI 2020; ICLR 2020; STOC 2020; UAI 2020 etc.

### Memberships

Institute of Mathematical Statistics