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Yining Wang

appointments

Assistant Professor, Department of Information Systems and Operations Management, Warrington College of Business, University of Florida, since 2019.

education

Ph.D., Machine Learning, Carnegie Mellon University, 2019.
Advisor: Aarti Singh
Thesis: "Selective Data Acquisition in Learning and Decision Making Problems."
Thesis committee: Aarti Singh (chair), Sivaraman Balakrishnan, Larry Wasserman, Robert Nowak (University of Wisconsin at Madison).

M.S., Machine Learning, Carnegie Mellon University, 2017.

B.Eng., Computer Science and Technology, Tsinghua University (China), 2014.
GPA: *93.5/100*, last two-year: *94.5/100*, class ranking: *2/35* (Yao class).
Thesis (advised by Jun Zhu): "Spectral Methods in Supervised Topic Modeling" (in Chinese).
Exchange student, Massachusetts Institute of Technology, Feb 2013 to May 2013.

selected papers

[**] indicates equal contribution; [*] indicates alphabetical author order.

Peer-reviewed journals

Yining Wang, Jialei Wang, Sivaraman Balakrishnan and Aarti Singh. "Rate Optimal Estimation and Confidence Intervals for High-dimensional Regression with Missing Covariates." *Journal of Multivariate Analysis*, accepted.

Yining Wang, Sivaraman Balakrishnan and Aarti Singh. "Optimization of Smooth Functions with Noisy Observations: Local Minimax Rates." *IEEE Transactions on Information Theory*, accepted.

Xi Chen[*], Yining Wang[*] and Yu-Xiang Wang[*]. "Technical Note: Non-stationary Stochastic Optimization under $L_{p,q}$-Variation Measures." *Operations Research*, accepted.

Yining Wang, Yu-Xiang Wang and Aarti Singh. "A Theoretical Analysis of Noisy Sparse Subspace Clustering on Dimensionality-Reduced Data." *IEEE Transactions on Information Theory* 65(2):685-706, 2019.

Yining Wang. "Convergence Rates of Latent Topic Models Under Relaxed Identifiability Conditions." *Electronic Journal of Statistics* 13(1):37-66, 2019.

Xi Chen[*] and Yining Wang[*]. "A Note on a Tight Lower Bound for MNL-Bandit Assortment Selection Models." *Operations Research Letters* 46(5):534-537, 2018.

Yining Wang and Aarti Singh. "Provably Correct Active Sampling Algorithms for Matrix Column Subset Selection with Missing Data." *Journal of Machine Learning Research* 18(156):1-42, 2018.

Yining Wang, Adams Wei Yu and Aarti Singh. "On Computationally Tractable Selection of Experiments in Measurement-Constrained Regression Models." *Journal of Machine Learning Research* 18(143):1-41, 2017.

Yong Ren[**] , Yining Wang[**] and Jun Zhu. "Spectral Learning for Supervised Topic Models." *IEEE Transactions on Pattern Analysis and Machine Intelligence* 40(3):726-739, 2018.

Under review or revision

Yining Wang, Yi Wu and Simon Du. "Near-Linear Time Local Polynomial Nonparametric Estimation." Under revision at *INFORMS Journal on Computing*.

Boxiao Chen, Xiuli Chao and Yining Wang. "Data Based Dynamic Pricing and Inventory Control with Censored Demand and Limited Price Changes." Revised and resubmitted to *Operations Research*.

Simon Du[**], Yining Wang[**], Xiyu Zhai, Sivaraman Balakrishnan, Ruslan Salakhutdinov and Aarti Singh. "How Many Samples are Needed to Learn a Convolutional or Recurrent Neural Network?" Submitted to *Journal of Machine Learning Research*.

Yingkai Li[*], Yining Wang[*] and Yuan Zhou[*]. "Nearly Minimax-Optimal Regret for Linearly Parameterized Bandits." Submitted to *Mathematics of Operations Research*.

Xi Chen[*], Yining Wang[*] and Yuan Zhou[*]. "An Optimal Policy for Dynamic Assortment Planning Under Uncapacitated Multinomial Logit Models." Submitted to *Mathematics of Operations Research*.

Xi Chen[*], Yining Wang[*] and Yuan Zhou[*]. "Dynamic Assortment Optimization with Changing Contextual Information." Submitted to *Operations Research*.

Xi Chen[*], Yining Wang[*] and Yuan Zhou[*]. "Dynamic Assortment Selection under the Nested Logit Models." Submitted to *Production and Operations Management*.

Zeyuan Allen-Zhu[*], Yuanzhi Li[*], Aarti Singh[*] and Yining Wang[*]. "Near-Optimal Discrete Optimization for Experimental Design: A Regret Minimization Approach." Under revision at *Mathematical Programming*.

Peer-reviewed conference proceedings

([†]papers that partially overlap with journal publications)

[†]Yingkai Li[*], Yining Wang[*] and Yuan Zhou[*]. "Nearly Minimax-Optimal Regret for Linearly Parameterized Bandits." In *COLT*, 2019.

[†]Yining Wang, Xi Chen and Yuan Zhou. "Near-Optimal Policies for Dynamic Multinomial Logit Assortment Selection Models." In *NeurIPS*, 2018.

[†]Yining Wang, Sivaraman Balakrishnan and Aarti Singh. "Optimization of Smooth Functions with Noisy Observations: Local Minimax Rates." In *NeurIPS*, 2018.

[†]Simon Du[**], Yining Wang[**], Xiyu Zhai, Sivaraman Balakrishnan, Ruslan Salakhutdinov and Aarti Singh. "How Many Samples are Needed to Learn a Convolutional Neural Network?" In *NeurIPS*, 2018.

Yining Wang, Simon Du, Sivaraman Balakrishnan and Aarti Singh. "Stochastic Zeroth-Order Optimization in High Dimensions." In *AISTATS*, 2018 (oral presentation).

Cynthia Rudin and Yining Wang. "Direct Learning to Rank and Rerank." In *AISTATS*, 2018.

†Zeyuan Allen-Zhu[*], Yuanzhi Li[*], Aarti Singh[*] and Yining Wang[*]. "Near-Optimal Design of Experiments via Regret Minimization." In *ICML*, 2017.

Chong Wang, Yining Wang, Po-Sen Huang, Abdelrahman Mohamed, Dengyong Zhou and Li Deng. "Sequence Modeling via Segmentations." In *ICML*, 2017.

Maria-Florina Balcan[*], Simon Du[*], Yining Wang[*] and Adams Wei Yu[*]. "An Improved Gap-Dependency Analysis of the Noisy Power Method." In *COLT*, 2016.

Yining Wang and Anima Anandkumar. "Online and Differentially Private Tensor Decomposition." In *NIPS*, 2016.

Bo Li[**], Yining Wang[**], Aarti Singh and Yevgeniy Vorobeychik. "Data Poisoning Attacks on Factorization-Based Collaborative Filtering." In *NIPS*, 2016.

Yining Wang, Yu-Xiang Wang and Aarti Singh. "Graph Connectivity in Noisy Sparse Subspace Clustering." In *AISTATS*, 2016.

Yining Wang and Aarti Singh. "Noise-adaptive Margin-based Active Learning and Lower Bounds under Tsybakov Noise Condition." In *AAAI*, 2016.

Yining Wang, Hsiao-Yu Tung, Alex Smola and Anima Anandkumar. "Fast and Guaranteed Tensor Decomposition via Sketching." In *NIPS*, 2015 (spotlight).

Yining Wang, Yu-Xiang Wang and Aarti Singh. "Differentially Private Subspace Clustering." In *NIPS*, 2015.

†Yining Wang, Yu-Xiang Wang and Aarti Singh. "A Deterministic Analysis of Noisy Sparse Subspace Clustering for Dimensionality-reduced Data." In *ICML*, 2015.

Yining Wang and Jun Zhu. "DP-space: Bayesian Nonparametric Subspace Clustering with Small-variance Asymptotics." In *ICML*, 2015.

†Yining Wang and Aarti Singh. "Column Subset Selection with Missing Data via Active Sampling." In *AISTATS*, 2015.

†Yining Wang and Jun Zhu. "Spectral Methods for Supervised Topic Models." In *NIPS*, 2014.

Yining Wang and Jun Zhu. "Small-variance Asymptotics for Dirichlet Process Mixtures of SVMs." In *AAAI*, 2014.

Yining Wang, Liwei Wang, Yuanzhi Li, Di He, Wei Chen and Tie-Yan Liu. "A Theoretical Analysis of Normalized Discounted Cumulative Gain (NDCG) Ranking Measures." In *COLT*, 2013.

Technical reports & notes

Yaonan Jin[*], Yingkai Li[*], Yining Wang[*] and Yuan Zhou[*]. "On Asymptotically Tight Tail Bounds for Sums of Geometric and Exponential Random Variables."

Simon Du, Yining Wang, Sivaraman Balakrishnan, Pradeep Ravikumar and Aarti Singh. "Robust Nonparametric Regression under Huber's ε-contamination Model."

selected invited talks

"Dynamic Assortment Optimization under Discrete Choice Models."
School of Information Systems, Singapore Management University, Dec 2018.
Sauder School of Business, University of British Columbia, Dec 2018.
Desautels Faculty of Management, McGill University, Dec 2018.
Warrington College of Business, University of Florida, Nov 2018.

"Selective Data Acquisition in Learning and Decision Making Problems."
Department of Computer Science, University of Illinois at Urbana-Champaign, Nov 2018.
Department of Industrial Engineering, University of Pittsburgh, Nov 2018.

"Computational Aspects of Selection of Experiments."
SMCS seminar, Department of Statistics, Pennsylvania State University, Apr 2019.
Statistics seminar, Department of ISyE, Georgia Institute of Technology, Sep 2018.
Theory lunch, School of Computer Science, Carnegie Mellon University, Nov 2017.
YPNG seminar, Department of Statistics, Yale University, Sep 2016.

"Zeroth-order Non-Convex Smooth Optimization: Local Minimax Rates."
ML lunch, Microsoft Research Redmond, Mar 2018.
SML reading group, Carnegie Mellon University, Jan 2018.

selected conference presentations

(Invited) "Dynamic Assortment Optimization in the Presence of Outlier Customers." *INFORMS Annual Meeting*, Seattle, USA, Oct 2019.

(Invited) "Dynamic Assortment Optimization under the Nested Logit Model." *INFORMS Workshop on Data Mining and Analytics*, Seattle, USA, Oct 2019.

"An Optimal Policy for Dynamic Assortment Planning under Uncapacitated Multinomial Logit Models." *INFORMS Revenue Management and Pricing Conference*, Stanford University, Palo Alto, USA, June 2019.

(Invited) "Dynamic Assortment Optimization with Features." *INFORMS Annual Meeting*, Phoenix, USA, Nov 2018.

"Efficient Load Sampling for Worst-case Structural Analysis." *ASME International Design Engineering Technical Conferences*, Quebec city, Canada, Aug 2018.

(Invited) "Linear Quantization by Effective Resistance Sampling." *International Conference on Acoustics, Speech and Signal Processing*, Calgary, Canada, May 2018.

"Stochastic Zeroth-order Optimization in High Dimensions." *International Conference on Artificial Intelligence and Statistics*, Lanzarote, Spain, Apr 2018.

(Invited) "Non-stationary Stochastic Optimization with Local Spatial and Temporal Changes." *INFORMS Annual Meeting*, Houston, USA, Oct 2017.

"Near-Optimal Design of Experiments via Regret Minimization." *International Conference on Machine Learning*, Sydney, Australia, July 2017.

"Noise-adaptive Margin-based Active Learning and Lower Bounds under Tsybakov Noise Condition." *AAAI Conference on Artificial Intelligence*, Phoenix, USA, Jan 2016.

"Fast and Guaranteed Tensor Decomposition via Sketching." *Conference on Neural Information Processing Systems.* Montreal, Canada, Dec 2015.

(Invited) "An Empirical Comparison of Sampling Techniques for Matrix Column Subset Selection." *Annual Allerton Conference on Communication, Control and Computing*, Monticello, USA, Sep 2015.

"Noisy Sparse Subspace Clustering for Dimensionality-reduced Data." *International Conference on Machine Learning*, Lille, France, July 2015.

"Small-variance Asymptotics for Dirichlet Process Mixtures of SVMs." *AAAI Conference on Artificial Intelligence*, Quebec City, Canada, July 2014.

media coverage

Forbes, "Deep Learning Innovation Starts In The Lab", December 2018.

awards and honors

Research paper awards

"Dynamic Assortment Planning with Changing Contextual Information". Finalist in INFORMS Junior Faculty Interest Group (JFIG) paper competition, 2019.

"How Many Samples are Needed to Learn a Convolutional Neural Network." NeurIPS NVIDIA Pioneer Award, 2018.

"Direct Learning to Rank and Rerank." Finalist in INFORMS Annual Meeting QSR Section Best Paper Competition, 2017.

University scholarships

Yao award (the highest honor for Yao Class students), second award (2/35), 2013.
Baidu Future Star Scholarship, 2012.

Student travel scholarships

AAAI 2014, NIPS 2014, NIPS 2015, ICML 2017, NIPS 2017.

Programming contests

Silver medal. The 35th ACM/ICPC Regional Contest (Chengdu, China). 2010.
Gold medal. Chinese National Olympiad in Informatics (Beijing, China). 2009.
Gold medal, Asia-Pacific Olympiad in Informatics (Dalian, China). 2008.

teaching experiences

University of Florida

Instructor, *ISM 6423* Data Analytics/Decision Support, Fall 2019.

Carnegie Mellon University

TA, *10-702* Statistical Machine Learning (graduate), Spring 2017.

TA, *10-401* Introduction to Machine Learning (undergraduate), Spring 2016.

professional services

Paper reviewer.

Operations

Management Science
Mathematics of Operations Research
Transportation Research Part B (Methodological)
Applied Mathematics & Optimization

Statistics

Bernoulli
Journal of the Royal Statistics Society Series C (Applied Statistics)
Computational Statistics

Machine learning

Journal of Machine Learning Research
IEEE Transactions on Information Theory
IEEE Transactions on Pattern Analysis and Machine Intelligence
IEEE Transactions on Signal Processing

Applications

International Journal on Computer Vision
Digital Signal Processing
PLoS One
Science Advances

Conferences

International Conference on Machine Learning (ICML)
Advances in Neural Information Processing Systems (NIPS/NeurIPS)
International Conference on Artificial Intelligence and Statistics (AISTATS)
Conference on Learning Theory (COLT)
International Conference on Learning Representations (ICLR)
Conference on Uncertainty in Artificial Intelligence (UAI)
AAAI Conference on Artificial Intelligence (AAAI)
International Joint Conference on Artificial Intelligence (IJCAI)
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
International Conference on Computer Vision (ICCV)
European Conference on Computer Vision (ECCV)

university services

Carnegie Mellon University

Student PhD admission committees. 2016, 2017.

industry experiences

Intern, Microsoft Research, New York, USA. June 2019 to Aug 2019.
Responsibilities: *theoretical topics in reinforcement learning and contextual bandit.*

Intern, Microsoft Research, Seattle, USA. May 2016 to Aug 2016.
Responsibilities: *recurrent neural networks for machine translation.*

Intern, Symantec Research Labs, Los Angeles, USA. June 2015 to Aug 2015.
Responsibilities: *collaborative filtering for enterprise-level malicious attack prediction.*

Intern, Microsoft Research Asia, Beijing, China. Oct 2011 to Jul 2013.
Responsibilities: *natural language processing based healthcare systems.*