Machine Learning Department,
Carnegie Mellon University,
Pittsburgh, PA 15213, USA.

(412) 721-3814
yiningwa@cs.cmu.edu
http://www.yining-wang.com

Yining Wang

education

Ph.D., Machine Learning, Carnegie Mellon University. Expected 2019.
Advisor: Aarti Singh
Thesis: "Selective Data Acquisition in Learning and Decision Making Problems."

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).
Undergraduate thesis: "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

Xi Chen*, Yining Wang* and Yu-Xiang Wang*. "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*, accepted.

Yining Wang. "Convergence Rates of Latent Topic Models Under Relaxed Identifiability Conditions." *Electronic Journal of Statistics*, accepted.

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 Reng**, 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

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

Zeyuan Allen-Zhu[*], Yuanzhi Li[*], Aarti Singh[*] and Yining Wang[*]. "Near-Optimal Discrete Optimization for Experimental Design: A Regret Minimization Approach." Submitted to *Mathematical Programming*. Preliminary version in *ICML*, 2017.

Yining Wang, Sivaraman Balakrishnan and Aarti Singh. "Optimization of Smooth Functions with Noisy Observations: Local Minimax Rates." Submitted to *IEEE Transactions on Information Theory*. Preliminary version in *NeurIPS*, 2018.

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

Peer-reviewed conference proceedings

Yining Wang, Xi Chen and Yuan Zhou. "Near-Optimal Policies for Dynamic Multinomial Logit Assortment Selection Models." 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.

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

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.

selected invited talks

"Dynamic Assortment Optimization under Discrete Choice Models."
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 (Gainesville), 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."
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 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.

teaching experiences

Carnegie Mellon University

Teaching assistant, Statistical Machine Learning (graduate), Spring 2017.
Teaching assistant, Introduction to Machine Learning (undergraduate), Spring 2016.

industry experiences

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 2016 to Aug 2016.
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.*

professional services

Paper reviewer.

Operations

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 (AISTATS)
Conference on Learning Theory (COLT)
International Conference on Learning Representations (ICLR)
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.

awards and honors

Research paper awards

"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.