

Yuchen Zhang

CONTACT

<https://zhangyuc.github.io/>
Email: zhangyuc@cs.stanford.edu
Phone: (+1)-510-423-1353

ADDRESS

Gates Computer Science 254,
Stanford University,
Stanford, CA 94305.

Education

University of California, Berkeley Doctor of Philosophy in Computer Science Advised by Michael I. Jordan and Martin J. Wainwright	2011 - 2016
University of California, Berkeley Master of Arts in Statistics	2011 - 2013
Tsinghua University Bachelor of Engineering in Computer Science Supervised by Andrew C. Yao	2007 - 2011

Employment

Post-doc Research Fellow at Stanford University	2016 - Now
Intern at Baidu	Winter, 2015
Intern at Microsoft Research Redmond	Summer, 2014
Intern at Google Mountain View	Summer, 2013
Intern at Microsoft Research Asia	2010 - 2011

Awards & Honors

2017	Best Paper Award, Annual Conference on Learning Theory (COLT).
2016	Outstanding Reviewer Award, International Conference on Machine Learning (ICML).
2015	Baidu Fellowship.
2013	Microsoft Research PhD Fellowship Finalist.
2011	UC Berkeley EECS Department Fellowship.
2011	Outstanding Undergraduate Dissertation Award.
2011	Boeing Scholarship.
2010	Tencent Scholarship for Excellent Academic Performance.
2006	Silver Medal in Asian Physics Olympiad.
2006	Gold Medal in National Physics Olympiad (5 th among 400,000 participants).

Research

My research explores the frontiers of Artificial Intelligence technology by developing algorithms, building systems and proposing fundamental theory. I have been working on the following research areas (with publication references):

- Semantic parsing for question answering.
- Deep learning and non-convex optimization [C1,C2,C3,C4,C5].
- Distributed algorithms for machine learning [J4,J5,C6,C7,C14].
- Programming interface for parallelizing stochastic algorithms [M1] (*open source project*).
- Convex optimization [C8].

- Fundamental trade-offs between communication, computation and statistical accuracy [C10,C12,M2].
- Crowdsourcing [J3,C9].
- Personalized recommender systems [C11].
- Click modeling for web search and online advertising [C15,C16,C17,C18,C19,C20] (*Improved +0.8% NDCG on Microsoft Bing*).
- Theoretical statistics [J1,J2].
- Theoretical computer science [J6,C21].

Manuscripts

- [M1] **Y. Zhang** and MI. Jordan. Splash: User-friendly Programming Interface for Parallelizing Stochastic Algorithms. *arXiv:1506.07552*, 2015.
- [M2] J. Duchi, MI. Jordan, M. Wainwright and **Y. Zhang** (alpha-beta order). Optimality Guarantees for Distributed Statistical Estimation. *arXiv:1405.0782*, 2014.

Journal Publications

- [J1] **Y. Zhang**, M. Wainwright and MI. Jordan. Optimal prediction for sparse linear models? Lower bounds for coordinate-separable M-estimators. *Electronic Journal of Statistics*.
- [J2] X. Chen, A. Guntuboyina and **Y. Zhang** (alpha-beta order). On Bayes Risk Lower Bounds. *Journal of Machine Learning Research*.
- [J3] **Y. Zhang**, X. Chen, D. Zhou and MI. Jordan. Spectral Methods meet EM: A Provably Optimal Algorithm for Crowdsourcing. *Journal of Machine Learning Research*.
- [J4] **Y. Zhang**, J. Duchi and M. Wainwright. Divide and Conquer Kernel Ridge Regression: A Distributed Algorithm with Minimax Optimal Rates. *Journal of Machine Learning Research*.
- [J5] **Y. Zhang**, J. Duchi and M. Wainwright. Communication-Efficient Algorithms for Statistical Optimization. *Journal of Machine Learning Research*.
- [J6] **Y. Zhang** and X. Sun. The Antimagicalness of the Cartesian Product of Graphs. *Theoretical Computer Science*.

Conference Publications

- [C1] **Y. Zhang**, P. Liang, M. Wainwright. Convexified Convolutional Neural Networks. *International Conference on Machine Learning (ICML)*, 2017.
- [C2] **Y. Zhang**, P. Liang, M. Charikar. A Hitting Time Analysis of Stochastic Gradient Langevin Dynamics. *Annual Conference on Learning Theory (COLT)*, 2017 (**Best paper award**).
- [C3] **Y. Zhang**, JD. Lee, M. Wainwright and MI. Jordan. On the Learnability of Fully-connected Neural Networks. *Artificial Intelligence and Statistics (AISTATS)*, 2017.
- [C4] C. Jin, **Y. Zhang**, S. Balakrishnan, M. Wainwright, MI. Jordan. Local Maxima in the Likelihood of Gaussian Mixture Models: Structural Results and Algorithmic Consequences. *Neural Information Processing Systems (NIPS)*, 2016.
- [C5] **Y. Zhang**, JD. Lee, MI. Jordan. ℓ_1 -regularized Neural Networks are Improperly Learnable in Polynomial Time. *International Conference on Machine Learning (ICML)*, 2016.
- [C6] **Y. Zhang**, M. Wainwright and MI. Jordan. Distributed Estimation of Generalized Matrix Rank: Efficient Algorithms and Lower Bounds. *International Conference on Machine Learning (ICML)*, 2015.

- [C7] **Y. Zhang** and L. Xiao. DiSCO: Communication-Efficient Distributed Optimization of Self-Concordant Loss. *International Conference on Machine Learning (ICML)*, 2015.
- [C8] **Y. Zhang** and L. Xiao. Stochastic Primal-Dual Coordinate Method for Regularized Empirical Risk Minimization. *International Conference on Machine Learning (ICML)*, 2015.
- [C9] **Y. Zhang**, X. Chen, D. Zhou and M.I. Jordan. Spectral Methods meet EM: A Provably Optimal Algorithm for Crowdsourcing. *Neural Information Processing Systems (NIPS)*, 2014 (**Single-track spotlight presentation**).
- [C10] **Y. Zhang**, M. Wainwright and M.I. Jordan. Lower Bounds on the Performance of Polynomial-time Algorithms for Sparse Linear Regression. *Annual Conference on Learning Theory (COLT)*, 2014.
- [C11] **Y. Zhang**, A. Ahmed, V. Josifovski and A. Smola. Taxonomy Discovery for Personalized Recommendation. *ACM International Conference on Web Search and Data Mining (WSDM)*, 2014.
- [C12] **Y. Zhang**, J. Duchi, M. Wainwright and M.I. Jordan. Information-theoretic Lower Bounds for Distributed Statistical Estimation with Communication Constraints. *Neural Information Processing Systems (NIPS)*, 2013 (**Single-track oral presentation**).
- [C13] **Y. Zhang**, J. Duchi and M. Wainwright. Divide and Conquer Kernel Ridge Regression. *Annual Conference on Learning Theory (COLT)*, 2013.
- [C14] **Y. Zhang**, J. Duchi and M. Wainwright. Communication-Efficient Algorithms for Statistical Optimization. *Neural Information Processing Systems (NIPS)*, 2012.
- [C15] W. Chen, D. Wang, **Y. Zhang** and Q. Yang. Understanding Click Noise: A Noise-aware Click Model for Web Search. *ACM International Conference on Web Search and Data Mining (WSDM)*, 2012.
- [C16] **Y. Zhang**, W. Chen and D. Wang, Q. Yang. User-click Modeling for Understanding and Predicting Search-behavior. *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, 2011.
- [C17] B. Hu, **Y. Zhang**, G. Wang, Q. Yang, W. Chen. Characterize Search Intent Diversity into Click Models. *International World Wide Web Conference (WWW)*, 2011.
- [C18] **Y. Zhang**, D. Wang, G. Wang, W. Chen, Z. Zhang, B. Hu and L. Zhang. Learning Click Model via Probit Bayesian Inference. *ACM International Conference on Information and Knowledge Management (CIKM)*, 2010.
- [C19] D. Wang, W. Chen, G. Wang, **Y. Zhang** and B. Hu. Explore Click Models for Search Ranking. *ACM International Conference on Information and Knowledge Management (CIKM)*, short paper, 2010.
- [C20] F. Zhong, D. Wang, G. Wang, W. Chen, **Y. Zhang**, Z. Chen and H. Wang. Incorporating Post-Click Behaviors Into a Click Model. *Annual International ACM SIGIR Conference (SIGIR)*, 2010.
- [C21] **Y. Zhang** and L. Zhang. Extracting Independent Rules: a New Perspective of Boosting. *International Symposium on Artificial Intelligence and Mathematics (ISAIM)*, 2010.

Teaching

Teaching Assistant, Introduction to machine learning, UC Berkeley

Spring, 2015

Teaching Assistant, Randomized algorithms for matrices and data, UC Berkeley

Fall, 2013

Service

Journal Reviewer: Journal of Machine Learning Research, Annals of Statistics, Mathematical Programming, ACM Transactions on the Web.

Conference Reviewer: ICML (2013 -), NIPS (2013 -), AISTAT (2015), IJCAI (2015 -), ISIT (2015).

References

Michael I. Jordan

Pehong Chen Distinguished Professor
EECS and Statistics, UC Berkeley
`jordan@cs.berkeley.edu`

Lin Xiao

Principle Researcher
Machine Learning Department
Microsoft Research Redmond
`lin.xiao@microsoft.com`

Martin J. Wainwright

Professor
EECS and Statistics, UC Berkeley
`wainwrig@eecs.berkeley.edu`

Percy Liang

Assistant Professor
Computer Science Department
Stanford University
`pliang@cs.stanford.edu`