Yuchen Zhang

CONTACT
https://zhangyuc.github.io/
Email: yuczhang@cs.stanford.com
Phone: (+1)-510-423-1353

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

Education

University of California, Berkeley   2011 - 2016
Doctor of Philosophy in Computer Science
Advised by Michael I. Jordan and Martin J. Wainwright

University of California, Berkeley   2011 - 2013
Master of Arts in Statistics

Tsinghua University   2007 - 2011
Bachelor of Engineering in Computer Science
Supervised by Andrew C. Yao

Appointments

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 (5th among 400,000 participants).

Research

My general research goal is to push the frontier of Artificial Intelligence technology, by developing algorithms, building systems and proposing fundamental theory. I am broadly interested in the following research topics. Each topic is followed by a list of 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 Antimagicness 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 MI. 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 MI. 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 MI. 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