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教育背景

- 加州大学伯克利分校 (UC Berkeley) 2011 - 2016
计算机科学博士
导师: Michael I. Jordan, Martin J. Wainwright
研究方向: 分布式机器学习算法、优化算法、深度学习算法和理论
- 加州大学伯克利分校 (UC Berkeley) 2011 - 2013
统计学硕士
- 清华大学 2007 - 2011
计算机科学与技术学士
计算机科学实验班 (姚班)

工作背景

- 主任研究员 (Principal Researcher), 微软 2018 - 现在
 - 为微软公司搭建下一代的对话系统框架。这套全新的技术让用户可以像和人类伙伴对话一样, 自然地、结合上下文地、协作性地与智能助手进行对话, 共同完成复杂的任务。我们的技术服务众多的微软产品 (链接: [来自微软 CEO 的产品演示](#); [我们的团队](#))。
 - 我领导了对话系统中的核心对话引擎的设计和实现。该对话引擎支持任意复杂的自然语言理解, 并包含全新的对话状态管理系统, 以驱动流畅的多轮次、跨领域对话 (链接: [对话引擎的设计](#))。
 - 我还领导了对话产品的国际化: 包括多语言的数据收集、语义理解和语言生成系统等, 以服务美国以外的全部市场。
- 资深研究员, Semantic Machines Inc. 2018
 - 我们是一个由世界级的研究员和工程师们组成的创业团队。我们的使命是开发下一代的对话式人工智能技术; 2018 年 6 月被微软收购。
- 博士后研究员, 斯坦福大学 2016 - 2018
 - 面向维基百科的问答系统: 比当时最好的系统快 10 倍, 并提升 10% 的准确率。
 - 深度学习理论: 获 2017 年 COLT 会议 (机器学习理论的最高学术会议) 最佳论文奖。

研究背景

我的研究兴趣包括自然语言处理、机器学习算法、分布式算法、搜索和推荐系统等。

自然语言处理

- 任务型对话系统 [J1, P1, P2].
- 语义解析模型 [C2].

机器学习和优化算法

- 深度学习中的非凸优化算法 [C3,C4,C5,C6,C7].
- 凸优化算法 [J2,C10].
- 众包算法 [J6,C11].
- 对抗性机器学习 [C1].

- 个性化推荐模型 [C13].
- 搜索和在线广告 [C17,C18,C19,C20,C21,C22]

分布式计算

- 分布式系统中的机器学习算法 [J7,J8,C8,C9,C15,C16].
- 分布式计算的基础理论 [C12,C14].
- 随机算法 (如随机梯度下降) 的并行化编程框架 [T1].

其他研究项目

- 理论统计学 [J3,J4,J5].
- 理论计算机科学 [J9,C23].

专利

- [P1] **Y. Zhang**, J. Wolfe, A. Pauls and D. Hall. Updating Constraints For Computerized Assistant Actions. *U.S. Patent*, Filed by Microsoft on March 30, 2020.
- [P2] J. Andreas, A. Vorobev, A. Guo, J. Krishnamurthy, J. Bufe, J. Rusak and **Y. Zhang**. Response Generation For Conversational Computing Interface, *U.S. Patent*, Filed by Microsoft on August 12, 2019.

期刊论文

- [J1] **Y. Zhang** and the Semantic Machines team (alpha-beta order). Task-Oriented Dialogue as Dataflow Synthesis. *Transactions of the Association for Computational Linguistics*.
- [J2] **Y. Zhang** and L. Xiao. Stochastic Primal-Dual Coordinate Method for Regularized Empirical Risk Minimization. *Journal of Machine Learning Research*.
- [J3] X. Chen, A. Guntuboyina and **Y. Zhang**. A note on the approximate admissibility of regularized estimators in the Gaussian sequence model. *Electronic Journal of Statistics*.
- [J4] **Y. Zhang**, M. Wainwright and M. I. Jordan. Optimal prediction for sparse linear models? Lower bounds for coordinate-separable M-estimators. *Electronic Journal of Statistics*.
- [J5] X. Chen, A. Guntuboyina and **Y. Zhang** (alpha-beta order). On Bayes Risk Lower Bounds. *Journal of Machine Learning Research*.
- [J6] **Y. Zhang**, X. Chen, D. Zhou and M. I. Jordan. Spectral Methods meet EM: A Provably Optimal Algorithm for Crowdsourcing. *Journal of Machine Learning Research*.
- [J7] **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*.
- [J8] **Y. Zhang**, J. Duchi and M. Wainwright. Communication-Efficient Algorithms for Statistical Optimization. *Journal of Machine Learning Research*.
- [J9] **Y. Zhang** and X. Sun. The Antimagicalness of the Cartesian Product of Graphs. *Theoretical Computer Science*.

会议论文

- [C1] **Y. Zhang**, P. Liang. Defending Against Whitebox Adversarial Attacks via Randomized Discretization. *Artificial Intelligence and Statistics (AISTATS)*, 2019.
- [C2] **Y. Zhang**, P. Pasupat, P. Liang. Macro Grammars and Holistic Triggering for Efficient Semantic Parsing. *Empirical Methods on Natural Language Processing (EMNLP)*, 2017.
- [C3] **Y. Zhang**, P. Liang, M. Wainwright. Convexified Convolutional Neural Networks. *International Conference on Machine Learning (ICML)*, 2017.

- [C4] **Y. Zhang**, P. Liang, M. Charikar. A Hitting Time Analysis of Stochastic Gradient Langevin Dynamics. *Conference on Learning Theory (COLT)*, 2017 (**Best paper award**).
- [C5] **Y. Zhang**, JD. Lee, M. Wainwright and MI. Jordan. On the Learnability of Fully-connected Neural Networks. *Artificial Intelligence and Statistics (AISTATS)*, 2017.
- [C6] 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.
- [C7] **Y. Zhang**, JD. Lee, MI. Jordan. ℓ_1 -regularized Neural Networks are Improperly Learnable in Polynomial Time. *International Conference on Machine Learning (ICML)*, 2016.
- [C8] **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.
- [C9] **Y. Zhang** and L. Xiao. DiSCO: Communication-Efficient Distributed Optimization of Self-Concordant Loss. *International Conference on Machine Learning (ICML)*, 2015.
- [C10] **Y. Zhang** and L. Xiao. Stochastic Primal-Dual Coordinate Method for Regularized Empirical Risk Minimization. *International Conference on Machine Learning (ICML)*, 2015.
- [C11] **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. (**Spotlight presentation, 4.8% acceptance rate**)
- [C12] **Y. Zhang**, M. Wainwright and MI. Jordan. Lower Bounds on the Performance of Polynomial-time Algorithms for Sparse Linear Regression. *Conference on Learning Theory (COLT)*, 2014.
- [C13] **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.
- [C14] **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. (**Oral presentation, 1.4% acceptance rate**)
- [C15] **Y. Zhang**, J. Duchi and M. Wainwright. Divide and Conquer Kernel Ridge Regression. *Conference on Learning Theory (COLT)*, 2013.
- [C16] **Y. Zhang**, J. Duchi and M. Wainwright. Communication-Efficient Algorithms for Statistical Optimization. *Neural Information Processing Systems (NIPS)*, 2012.
- [C17] 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.
- [C18] **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.
- [C19] B. Hu, **Y. Zhang**, G. Wang, Q. Yang, W. Chen. Characterize Search Intent Diversity into Click Models. *International World Wide Web Conference (WWW)*, 2011.
- [C20] **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.
- [C21] 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.
- [C22] 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.
- [C23] **Y. Zhang** and L. Zhang. Extracting Independent Rules: a New Perspective of Boosting. *International Symposium on Artificial Intelligence and Mathematics (ISAIM)*, 2010.

技术报告

[T1] **Y. Zhang** and M. I. Jordan. Splash: User-friendly Programming Interface for Parallelizing Stochastic Algorithms. *arXiv:1506.07552*, 2015.

奖励和荣誉

2017 最佳论文奖, 国际机器学习理论会议 (COLT)
2016 杰出审稿人奖, 国际机器学习会议 (ICML)
2015 百度奖学金 (世界范围遴选 8 名博士生)
2006 亚洲物理奥林匹克: 银牌
2006 中国物理奥林匹克: 金牌 (全国第 5 名)

学术服务

学术期刊审稿人: Journal of Machine Learning Research, Annals of Statistics, Mathematical Programming, ACM Transactions on the Web.

学术会议审稿人: ICML (2013 -), NIPS (2013 -), AISTAT (2015 -), IJCAI (2015 -).