Tianbao Yang

CONTACT INFORMATION

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RESEARCH INTERESTS

Machine Learning, Optimization, and Artificial Intelligence

AFFILIATIONS

Department of Computer Science and Engineering, Texas A&M University

APPOINTMENTS

Associate Professor 2022 - present
Department of Computer Science and Engineering, Texas A&M University, College Station, TX

Associate Professor 2020 - 2022
Department of Computer Science, The University of Iowa, Iowa City, IA

Assistant Professor 2014 - 2020
Department of Computer Science, The University of Iowa, Iowa City, IA

Researcher, **NEC Laboratories America, Inc.**, Cupertino, CA 2013 - 2014

Researcher, **GE Global Research**, San Ramon, CA 2012 - 2013

EDUCATION

Michigan State University, East Lansing, Michigan, USA

Doctor of Philosophy, Computer Science and Engineering 2012
Advisor: Dr. Rong Jin (now VP at Twitter)

University of Science and Technology of China, Hefei, Anhui, China

Bachelor of Engineering, Automation 2007

HONORS AND AWARDS

- Google Research Scholar, 2022.
- The 1st Place at MIT AICURES Challenge, 06/2021.
- The 1st Place at CheXpert Medical Imaging Competition, 08/31/2020.
- NSF CAREER Award, 2019.
- Dean's Excellence in Research Scholar, 2019.
- Old Gold Fellowship, UIowa, 2015.
- Excellence in Teaching, Berlin-Blank Center, UIowa, 2015.
- Runner-up, Detection competition in Large Scale Visual Recognition Challenge, 2013.
- Best Student Paper Award, The 25th Conference of Learning Theory (COLT), 2012.

PUBLICATIONS

Refereed Journal Publications: (* supervised/mentored student)

1. Zhishuai Guo*, Zhuoning Yuan*, Yan Yan*, **Tianbao Yang**. Fast Objective and Duality Gap Convergence for Non-convex Strongly-concave Min-max Problems. Accepted to JMLR with minor revision.
2. Bokun Wang*, Zhuoning Yuan, Yiming Ying, **Tianbao Yang**. Memory-based Optimization Methods for Model-Agnostic Meta-Learning. Accepted to JMLR with minor revision.

3. Frank Li, Xuan Zhang, Alejandro Pierre Comellas, Eric Hoffman, **Tianbao Yang**, Chinglong Lin. Contrastive Learning and Subtyping of Post-Covid-19 Lung Computed Tomography Images. *Frontiers in Physiology*, 2022.
4. **Tianbao Yang**, Yiming Ying. AUC Maximization in the Era of Big Data and AI: A Survey. *ACM Computing Surveys*, 2022.
5. Zhengyang Wang, Meng Liu, Youzhi Luo, Zhao Xu, Yaochen Xie, Limei Wang, Lei Cai, Qi Qi, Zhuoning Yuan, **Tianbao Yang**, Shuiwang Ji. Advanced Graph and Sequence Neural Networks for Molecular Property Prediction and Drug Discovery. *Bioinformatics*, 2021.
6. Mingrui Liu*, Hassan Rafique*, Qihang Lin, **Tianbao Yang**. First-order Convergence Theory for Weakly-Convex-Weakly-Concave Min-max Problems. *Journal of Machine Learning Research (JMLR)*, 2021.
7. Hassan Rafique*, Mingrui Liu*, Qihang Lin, **Tianbao Yang**. Non-Convex Min-Max Optimization: Provable Algorithms and Applications in Machine Learning. *Optimization Methods and Software*, 2020.
8. Qihang Lin, Selvaprabu Nadarajah, Negar Soheili, **Tianbao Yang**. A Data Efficient and Feasible Level Set Method for Stochastic Convex Optimization with Expectation Constraints. *Journal of Machine Learning Research (JMLR)*, 2020.
9. **Tianbao Yang**. Advancing Non-Convex and Constrained Learning: Challenges and Opportunities. *AI Matters*, 2019
10. **Tianbao Yang**, Lijun Zhang, Qihang Lin, Shenghuo Zhu, Rong Jin. High-dimensional model recovery from random sketched data by exploring intrinsic sparsity. *Machine Learning*, 2019.
11. Yi Xu*, Qihang Lin, **Tianbao Yang**. Accelerate Stochastic Subgradient Method by Leveraging Local Growth Condition. *In Analysis and Applications*, 2019
12. Lijun Zhang, **Tianbao Yang**, Rong Jin, Zhi-hua Zhou. Relative Error Bound Analysis for Nuclear Norm Regularized Matrix Completion. *Journal of Machine Learning Research (JMLR)*, 2019.
13. **Tianbao Yang**, Qihang Lin. RSG: Beating Subgradient Method without Smoothness and/or Strong Convexity. *Journal of Machine Learning Research (JMLR)*, 2018.
14. **Tianbao Yang**, Lijun Zhang, Rong Jin, Shenghuo Zhu, Zhi-Hua Zhou. A Simple Homotopy Proximal Mapping for Compressive Sensing. *Machine Learning*, 2018.
15. Yongan Tang, Jianxin He, Xiaoli Gao, **Tianbao Yang**, Xiangqun Zeng. Continuous amperometric hydrogen gas sensing in ionic liquids. *Analyst*, 2018.
16. Dixian Zhu*, Changjie Cai, **Tianbao Yang**, Xun Zhou. A Machine Learning Approach for Air Quality Prediction: Model Regularization and Optimization. *Journal of Big Data and Cognitive Computing*, 2018.
17. Jason Lee, Qihang Lin, Tengyu Ma, **Tianbao Yang**. "Distributed Stochastic Variance Reduced Gradient Methods and a Lower Bound for Communication Complexity". *Journal of Machine Learning Research*, 2017.
18. **Tianbao Yang**, Rong Jin, Shenghuo Zhu, Qihang Lin. "On Data Preconditioning for Regularized Loss Minimization". *Machine Learning*, pp 1-23, 2015.
19. Lijun Zhang, Mehrdad Mahdavi, Rong Jin, **Tianbao Yang**, Shenghuo Zhu. "Random Projections for Classification: A Recovery Approach". *IEEE Transactions on Information Theory*, 60(11):7300 - 7316, 2015.
20. **Tianbao Yang**, Mehrdad Mahdavi, Rong Jin, Shenghuo Zhu. "An Efficient Primal Dual Prox Method for Non-Smooth Optimization". *Machine Learning*, 98(3):369-406, 2015.
21. **Tianbao Yang**, Mehrdad Mahdavi, Rong Jin, Shenghuo Zhu. "Regret Bound by Variation for Online Convex Optimization". *Machine Learning*, 95(2): 183-223, 2014.

22. Rong Jin, **Tianbao Yang**, Mehrdad Mahdavi, Yu-Feng Li and Zhi-Hua Zhou. "Improved Bounds for the Nyström Method and their Application to Kernel Classification". *IEEE Information Theory*, 59(10): 6939-6949, 2013.
23. Bian-fang Chai, Jian Yu, Cai-yan Jia, **Tianbao Yang**, Ya-wen Jiang. "Combining a popularity-productivity stochastic block model with a discriminative content model for detecting general structures". *Physical Review E.*, 88(1):012807, 2013
24. Steven Hoi, Rong Jin, Peilin Zhao, **Tianbao Yang**. "Online Multiple Kernel Classification". *Machine Learning*, 90(2): 289-316, 2012.
25. Mehrdad Mahdavi, Rong Jin, **Tianbao Yang**. "Trading Regret for Efficiency: Online Convex Optimization with Long Term Constraints". *Journal of Machine Learning Research*, 13: 2503-2528 , 2012.
26. **Tianbao Yang**, Yun Chi, Shenghuo Zhu, Yihong Gong, Rong Jin. "Detecting Communities and Their Evolutions in Dynamic Social Networks: A Bayesian Approach". *Machine Learning*, 82(2): 157-189, 2010.

Refereed Conference Publications: (Highlights: **30 NeurIPS, 29 ICML, 5 COLT**, * supervised/mentored student)

1. Quanqi Hu*, Yongjian Zhong*, Tianbao Yang. Multi-block Min-max Bilevel Optimization with Applications in Multi-task Deep AUC Maximization. Accepted to NeurIPS 2022
2. Wei Jiang*, Gang Li*, Yibo Wang, Linjun Zhang, Tianbao Yang. Multi-block-Single-probe Variance Reduced Estimator for Coupled Compositional Optimization. Accepted to NeurIPS 2022
3. Yao Yao*, Qihang Lin, Tianbao Yang. Large-scale Optimization of Partial AUC in a Range of False Positive Rates. Accepted to NeurIPS 2022
4. Lijun Zhang, Wei Jiang, Jinfeng Yi, Tianbao Yang. Smoothed Online Convex Optimization Based on Discounted-Normal-Predictor. Accepted to NeurIPS 2022
5. Dixian Zhu*, Gang Li*, Bokun Wang, Xiaodong Wu, **Tianbao Yang**. When AUC meets DRO: Optimizing Partial AUC for Deep Learning with Non-Convex Convergence Guarantee. In *Proceedings of International Conference on Machine Learning*, 2022.
6. Bokun Wang*, **Tianbao Yang**. Finite-Sum Coupled Compositional Stochastic Optimization: Theory and Applications. In *Proceedings of International Conference on Machine Learning*, 2022.
7. Zhuoning* Yuan, Yuexin Wu, Zihao Qiu, Xianzhi Du, Lijun Zhang, Denny Zhou, **Tianbao Yang**. Provable Stochastic Optimization for Global Contrastive Learning: Small Batch Does Not Harm Performance. In *Proceedings of International Conference on Machine Learning*, 2022.
8. Zi-hao Qiu*, Quanqi Hu*, Yongjian Zhong, Lijun Zhang, **Tianbao Yang**. Large-scale Stochastic Optimization of NDCG Surrogates for Deep Learning with Provable Convergence. In *Proceedings of International Conference on Machine Learning*, 2022.
9. Wei Jiang*, Bokun Wang*, Yibo Wang, Lijun Zhang, **Tianbao Yang**. Optimal Algorithms for Stochastic Multi-Level Compositional Optimization. In *Proceedings of International Conference on Machine Learning*, 2022.
10. Haiyang Yu*, Limei Wang*, Bokun Wang*, **Tianbao Yang**, Shuiwang Ji GraphFM: Improving Large-Scale GNN Training via Feature Momentum. In *Proceedings of International Conference on Machine Learning*, 2022.
11. Lijun Zhang, Guanghui Wang, Jinfeng Yi, **Tianbao Yang**. A Simple yet Universal Strategy for Online Convex Optimization In *Proceedings of International Conference on Machine Learning*, 2022 (long talk, 118/5630=2%).

12. Zhuoning Yuan*, Zhishuai Guo, Nitesh Chawla, **Tianbao Yang**. Compositional Training for End-to-End Deep AUC Maximization. In *Proceedings of International Conference on Learning Representations*, 2022. (Spotlight, 176/3391=5%).
13. Guanghui Wang, Ming Yang, Lijun Zhang, **Tianbao Yang**. Momentum Accelerates the Convergence of Stochastic AUPRC Maximization. In AISTATS 2022.
14. Qi Qi*, Zhishuai Guo*, Yi Xu, Rong Jin, **Tianbao Yang**. An Online Method for Distributionally Deep Robust Optimization. In *Proceedings of Advances in Neural Information Processing System 32 (NeurIPS)*, 2021.
15. Qi Qi*, Youzhi Luo*, Zhao Xu*, Shuiwang Ji, **Tianbao Yang**. Stochastic Optimization of Area Under Precision-Recall Curve with Provable Convergence. In *Proceedings of Advances in Neural Information Processing System 32 (NeurIPS)*, 2021.
16. Lijun Zhang, Wei Jiang, Shiyin Lu, **Tianbao Yang**. Revisiting Smoothed Online Learning. In *Proceedings of Advances in Neural Information Processing System 32 (NeurIPS)*, 2021.
17. Guanghui Wang, Yuanyu Wan, **Tianbao Yang**, Lijun Zhang. Online Convex Optimization with Continuous Switching Constraint. In *Proceedings of Advances in Neural Information Processing System 32 (NeurIPS)*, 2021.
18. Zhenhuan Yang, Yunwen Lei, Puyu Wang, **Tianbao Yang**, Yiming Ying. Simple Stochastic and Online Gradient Descent Algorithms for Pairwise Learning. In *Proceedings of Advances in Neural Information Processing System 32 (NeurIPS)*, 2021.
19. Zhuoning Yuan*, Yan Yan, Milan Sonka, **Tianbao Yang**. Robust Deep AUC Maximization: A New Surrogate Loss and Empirical Studies on Medical Image Classification. In *Proceedings of International Conference on Computer Vision (ICCV)*, 2021.
20. Zhuoning Yuan*, Zhishuai Guo*, Yi Xu, Yiming Ying, **Tianbao Yang**. Federated Deep AUC Maximization for Heterogeneous Data with a Constant Communication Complexity. In *Proceedings of International Conference on Machine Learning*, 2021.
21. Yunwen Lei, Zhenhuan Yang, **Tianbao Yang**, Yiming Ying. Stability and Generalization of Stochastic Gradient Methods for Minimax Problems. In *Proceedings of International Conference on Machine Learning*, 2021.
22. Yunhui Guo, Mingrui Liu*, **Tianbao Yang**, and Tajana Rosing. Improved Schemes for Episodic Memory based Lifelong Learning Algorithm. In *Proceedings of Advances in Neural Information Processing System 30 (NeurIPS)*, 2020 (Spotlight acceptance rate: 4%).
23. Mingrui Liu*, Youssef Mroueh, Wei Zhang, Xiaodong Cui, Jerret Ross, **Tianbao Yang**, Payel Das. Decentralized Parallel Algorithm for Training Generative Adversarial Nets. In *Proceedings of Advances in Neural Information Processing System 30 (NeurIPS)*, 2020.
24. Yan Yan*, Yi Xu, Qihang Lin, Wei Liu, **Tianbao Yang**. Optimal Epoch Stochastic Gradient Descent Ascent Methods for Min-Max Optimization. To Appear in NeurIPS 2020.
25. Zhuoning Yuan*, Zhishuai Guo*, Xiaotian Yu, Xiaoyu Wang, **Tianbao Yang**. Accelerating Deep Learning with Millions of Classes. In *Proceedings of European Conference on Computer Vision (ECCV)*, 2020
26. Qi Qi*, Yan Yan*, Xiaoyu Wang, **Tianbao Yang**. A Simple and Effective Framework for Pairwise Deep Metric Learning. In *Proceedings of European Conference on Computer Vision (ECCV)*, 2020
27. Zhishuai Guo*, Mingrui Liu*, Zhuoning Yuan*, Li Shen, Wei Liu, **Tianbao Yang**. Communication-Efficient Distributed Stochastic AUC Maximization with Deep Neural Networks. In *Proceedings of Proceedings of the 37th International Conference on Machine Learning (ICML)*, 2020.
28. Yan Yan*, Yi Xu*, Lijun Zhang, Xiaoyu Wang, **Tianbao Yang**. Stochastic Optimization for Non-convex Inf-Projection Problems. In *Proceedings of Proceedings of the 37th International Conference on Machine Learning (ICML)*, 2020.

29. Runchao Ma, Qihang Lin, **Tianbao Yang**. Proximally Constrained Methods for Weakly Convex Optimization with Weakly Convex Constraints. In *Proceedings of Proceedings of the 37th International Conference on Machine Learning (ICML)*, 2020.

30. Lijun Zhang, Shiyin Lu, **Tianbao Yang**. Minimizing Dynamic Regret and Adaptive Regret Simultaneously. In *The 23rd International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2020.

31. Mingrui Liu*, Youssef Mroueh, Jerret Ross, Wei Zhang, Xiaodong Cui, Payel Das, **Tianbao Yang**. Towards Better Understanding of Adaptive Gradient Algorithms in Generative Adversarial Nets. In *Proceedings of the Seventh International Conference on Learning Representations (ICLR)*, 2020.

32. Mingrui Liu*, Zhuoning Yuan, Yiming Ying, **Tianbao Yang**. Stochastic AUC Maximization with Deep Neural Networks. In *Proceedings of the Seventh International Conference on Learning Representations (ICLR)*, 2020.

33. Pingbo Pan, Ping Liu, Yan Yan, **Tianbao Yang**, Yi Yang. Adversarial Localized Energy Networks for Structured Prediction. In *Proceedings of the 34st Conference on Artificial Intelligence (AAAI)*, 2020.

34. Dixian Zhu*, Dongjin Song, Yuncong Chen, Cristian Lumezanu, Wei Cheng, Bo Zong, Jingchao Ni, Takehiko Mizoguchi, **Tianbao Yang**, Haifeng Chen. Deep Unsupervised Binary Coding Networks for Multivariate Time Series Retrieval. In *Proceedings of the 34st Conference on Artificial Intelligence (AAAI)*, 2020.

35. Zhuoning Yuan*, Yan Yan, Rong Jin, **Tianbao Yang**. Why Does Stagewise Training Accelerate Convergence of Testing Error Over SGD? In *Proceedings of Advances in Neural Information Processing System 30 (NeurIPS)*, 2019.

36. Yi Xu*, Rong Jin, **Tianbao Yang**. Non-asymptotic Analysis of Stochastic Methods for Non-Smooth Non-Convex Regularized Problems. In *Proceedings of Advances in Neural Information Processing System 30 (NeurIPS)*, 2019.

37. Zaiyi Chen*, Yi Xu*, Haoyuan Hu, **Tianbao Yang**. Katalyst: Boosting Convex Katayusha for Non-Convex Problems with a Large Condition Number. In *Proceedings of Proceedings of the 36th International Conference on Machine Learning (ICML)*, 2019.

38. Yi Xu*, Qi Qi*, Qihang Lin, Rong Jin, **Tianbao Yang**. Stochastic Optimization for DC Functions and Non-smooth Non-convex Regularizers with Non-asymptotic Convergence. In *Proceedings of Proceedings of the 36th International Conference on Machine Learning (ICML)*, 2019.

39. Yi Xu*, Zhuoning Yuan*, Sen Yang, Rong Jin, **Tianbao Yang**. On the Convergence of (Stochastic) Gradient Descent with Extrapolation for Non-Convex Optimization. In *Proceedings of the International Joint Conference on AI (IJCAI)*, 2019.

40. Yi Xu*, Shenghuo Zhu, Sen Yang, Chi Zhang, Rong Jin, **Tianbao Yang**. Learning with Non-Convex Truncated Losses by SGD. In In *Proceedings of the International Conference on Uncertainty in Artificial Intelligence (UAI)*, 2019.

41. Jian Ren, Zhe Li*, Jianchao Yang, Ning Xu, **Tianbao Yang**, David Foran. EIGEN: Ecologically-Inspired GENetic Approach for Neural Network Structure Searching from Scratch. In *Proceedings of 2019 Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019. (acceptance rate: 25.2%).

42. Dixian Zhu*, Zhe Li*, Xiaoyu Wang, Boqing Gong, **Tianbao Yang**. A Robust Zero-Sum Game Framework for Pool-based Active Learning. In *Proceedings of the 22nd International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2019. (acceptance rate: 30%).

43. Zaiyi Chen*, Zhuoning Yuan*, Jinfeng Yi, Bowen Zhou, Enhong Chen, **Tianbao Yang**. Universal Stagewise Learning for Non-Convex Problems with Convergence on Averaged Solutions.

In *Proceedings of the Seventh International Conference on Learning Representations (ICLR)*, 2019. (acceptance rate: 31%).

44. Xiaoxuan Zhang*, Mingrui Liu*, Xun Zhou, **Tianbao Yang**. Faster Online Learning of Optimal Threshold for Consistent F-measure Optimization. In *Proceedings of Advances in Neural Information Processing System 29 (NeurIPS)*, 2018. (acceptance rate: 21%).
45. Mingrui Liu*, Zhe Li*, Xiaoyu Wang, Jinfeng Yi, **Tianbao Yang**. Adaptive Negative Curvature Descent with Applications in Non-convex Optimization. In *Proceedings of Advances in Neural Information Processing System 29 (NeurIPS)*, 2018. (acceptance rate: 21%).
46. Yi Xu*, Rong Jin, **Tianbao Yang**. First-order Stochastic Algorithms for Escaping From Saddle Points in Almost Linear Time. In *Proceedings of Advances in Neural Information Processing System 29 (NeurIPS)*, 2018. (acceptance rate: 21%).
47. Mingrui Liu*, Xiaoxuan Zhang*, Lijun Zhang, Rong Jin, **Tianbao Yang**. Fast Rates of ERM and Stochastic Approximation: Adaptive to Error Bound Conditions. In *Proceedings of Advances in Neural Information Processing System 29 (NeurIPS)*, 2018. (acceptance rate: 21%).
48. Yandong Li, Liqiang Wang, **Tianbao Yang**, Boqing Gong. How Local is the Local Diversity? Reinforcing Sequential Determinantal Point Processes with Dynamic Ground Sets for Supervised Video Summarization. In *Proceedings of the European Conference on Computer Vision (ECCV)*, 2018. (acceptance rate: 31.8%)
49. Aidean Sharghi, Ali Borji, Chengtao Li, **Tianbao Yang**, Boqing Gong. Improving Sequential Determinantal Point Processes for Supervised Video Summarization. In *Proceedings of the European Conference on Computer Vision (ECCV)*, 2018. (acceptance rate: 31.8%)
50. Mingrui Liu*, Xiaoxuan Zhang*, Zaiyi Chen, Xiaoyu Wang, **Tianbao Yang**. Fast Stochastic AUC Maximization with $O(1/n)$-Convergence Rate. In *Proceedings of the 35th International Conference on Machine Learning (ICML)*, 2018. (acceptance rate: 25%).
51. Zaiyi Chen*, Yi Xu*, Enhong Chen, **Tianbao Yang**. SADAGRAD: Strongly Adaptive Stochastic Gradient Methods. In *Proceedings of the 35th International Conference on Machine Learning (ICML)*, 2018. (acceptance rate: 25%).
52. Qihang Lin, Runchao Ma, **Tianbao Yang**. Level-Set Methods for Finite-Sum Constrained Convex Optimization. In *Proceedings of the 35th International Conference on Machine Learning (ICML)*, 2018. (acceptance rate: 25%).
53. Lijun Zhang, **Tianbao Yang**, Rong Jin, Zhi-Hua Zhou. Strongly Adaptive Regret Implies Optimally Dynamic Regret. In *Proceedings of the 35th International Conference on Machine Learning (ICML)*, 2018. (acceptance rate: 25%).
54. Zhuoning Yuan*, Xun Zhou, **Tianbao Yang**. A Deep Learning Approach to Traffic Accident Prediction on Heterogeneous Spatio-Temporal Data. In *Proceedings of ACM SIG Conference on Knowledge Discovery and Data Mining (KDD)*, 2018.
55. Yan Yan*, **Tianbao Yang**, Zhe Li, Qihang Lin, Yi Yang. A Unified Analysis of Stochastic Momentum Methods for Deep Learning. In *Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI)*, 2018. (acceptance rate: 20%).
56. Xiaotian Yu*, Irwin King, Michael R. Lyu, **Tianbao Yang**. A Generic Approach for Accelerating Stochastic Zeroth-Order Convex Optimization. In In *Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI)*, 2018. (acceptance rate: 20%).
57. **Tianbao Yang**, Zhe Li, Lijun Zhang. "A Simple Analysis for Exp-concave Empirical Minimization with Arbitrary Convex Regularizer". In *The 21st International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2018. (acceptance rate: 33%).
58. Yi Xu*, Qihang Lin, **Tianbao Yang**. "Adaptive SVRG Methods under Error Bound Conditions with Unknown Growth Parameter". In *Proceedings of Advances in Neural Information Processing System 28 (NIPS)*, 2017. (acceptance rate: 21%).

59. Yi Xu*, Mingrui Liu*, Qihang Lin, **Tianbao Yang**. ADMM without a Fixed Penalty Parameter: Faster Convergence with New Adaptive Penalization. In *Proceedings of Advances in Neural Information Processing System 28 (NIPS)*, 2017. (acceptance rate: 21%).

60. Mingrui Liu*, **Tianbao Yang**. "Adaptive Accelerated Gradient Converging Methods Under Holderian Error Bound Condition". In *Proceedings of Advances in Neural Information Processing System 28 (NIPS)*, 2017. (acceptance rate: 21%).

61. Lijun Zhang, Tianbao Yang, Jinfeng Yi, Rong Jin, Zhi-Hua Zhou. "Improved dynamic regret for non-degeneracy functions". In *Proceedings of Advances in Neural Information Processing System 28 (NIPS)*, 2017. (acceptance rate: 21%).

62. Lijun Zhang, **Tianbao Yang**, Rong Jin. "Empirical Risk Minimization for Stochastic Convex Optimization: $O(1/n)$ and $O(1/n^2)$-type of Risk bounds. In *Proceedings of the Conference of Learning Theory (COLT)*, 2017. (acceptance rate: 33%).

63. Yichi Xiao*, Zhe Li*, **Tianbao Yang**, Lijun Zhang. "SVD-free Convex-Concave Approaches for Nuclear Norm Regularization". In *Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI)*, 2017. (acceptance rate: 26%).

64. Yi Xu*, Qihang Lin, **Tianbao Yang**. "Stochastic Convex Optimization: Faster Local Growth Implies Faster Global Convergence". In *Proceedings of the 34th International Conference on Machine Learning (ICML)*, 2017. (acceptance rate: 25%).

65. **Tianbao Yang**, Qihang Lin, Lijun Zhang. "A Richer Theory of of Convex Constrained Optimization with Reduced Projections and Improved Rates". In *Proceedings of the 34th International Conference on Machine Learning (ICML)*, 2017. (acceptance rate: 25%).

66. Yi Xu*, Haiqing Yang, Lijun Zhang, **Tianbao Yang**. "Efficient Non-Oblivious Randomized Reduction for Risk Minimization with Improved Excess Risk Guarantee". In *Proceedings of the 31st Conference on Artificial Intelligence (AAAI)*, 2017. (acceptance rate: 24%).

67. Yan Yan*, **Tianbao Yang**, Yi Yang, Jianhui Chen. "A Framework of Online Learning with Imbalanced Streaming Data". In *Proceedings of the 31st Conference on Artificial Intelligence (AAAI)*, 2017. (acceptance rate: 24%).

68. Zhe Li*, **Tianbao Yang**, Lijun Zhang, Rong Jin. "A Two-stage Approach for Learning a Sparse Model with Sharp Excess Risk Analysis". In *Proceedings of the 31st Conference on Artificial Intelligence (AAAI)*, 2017. (acceptance rate: 24%).

69. Zhe Li*, Boqing Gong, **Tianbao Yang**. "Improved Dropout for Shallow and Deep Learning". In *Proceedings of Advances in Neural Information Processing System 27 (NIPS)*, 2016. (acceptance rate: 22%).

70. Yi Xu*, Yan Yan*, Qihang Lin, **Tianbao Yang**. "Homotopy Smoothing for Non-Smooth Problems with Lower Complexity than $O(1/\epsilon)$". In *Proceedings of Advances in Neural Information Processing System 27 (NIPS)*, 2016. (acceptance rate: 22%).

71. Lijun Zhang, **Tianbao Yang**, Rong Jin, Zhi-Hua Zhou. "Sparse Learning for Large-scale and High-dimensional data: a randomized convex-concave optimization approach". In *Proceedings of Algorithmic Learning Theory (ALT)*, 2016.

72. Jianhui Chen, **Tianbao Yang**, Qihang Lin, Lijun Zhang, Yi Chang. "Optimal Stochastic Strongly Convex Optimization with a Logarithmic Number of Projections". In *Proceedings of Conference on Uncertainty in Artificial Intelligence (UAI)*, 2016. (acceptance rate: 31%).

73. Xiaoxuan Zhang*, **Tianbao Yang**, Padmini Srinivasan. "Online Asymmetric Active Learning with Imbalanced data". In *Proceedings of ACM SIG Conference on Knowledge Discovery and Data Mining (KDD)*, 2016. (acceptance rate: 18%).

74. Lijun Zhang, **Tianbao Yang**, Rong Jin, Zhi-Hua Zhou. "Online Stochastic Linear Optimization under One-bit Feedback". In *Proceedings of the 33rd International Conference on Machine Learning (ICML)*, 2016. (acceptance rate: 24%).

75. **Tianbao Yang**, Lijun Zhang, Rong Jin, Jinfeng Yi. "Tracking Slowly Moving Clairvoyant: Optimal Dynamic Regret of Online Learning with True and Noisy Gradient". In *Proceedings of the 33rd International Conference on Machine Learning (ICML)*, 2016. (acceptance rate: 24%).

76. Chuang Guan*, **Tianbao Yang**, Boqing Gong. "Learning Attributes Equals Multi-Source Domain Generalization". In *Proceedings of the twenty-ninth IEEE Conference on Computer Vision and Pattern Recognition*, 2016. (Spotlight, acceptance rate: 9%).

77. Lijun Zhang, **Tianbao Yang**, Rong Jin and Zhi-Hua Zhou. "Stochastic Optimization for Kernel PCA". In *Proceedings of the 30th Conference on Artificial Intelligence (AAAI)*, 2016. (acceptance rate: 26%).

78. Zhe Li*, **Tianbao Yang**, Lijun Zhang, Rong Jin. "Fast and Accurate Refined Nystrom based Kernel SVM". In *Proceedings of the 30th Conference on Artificial Intelligence (AAAI)*, 2016. (acceptance rate: 26%).

79. Jinfeng Yi, Lijun Zhang, **Tianbao Yang**, Wei Liu and Jun Wang. "An Efficient Semi-Supervised Clustering Algorithm with Sequential Constraints". In *Proceedings of 21st SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, 2015.

80. **Tianbao Yang**, Lijun Zhang, Rong Jin, Shenghuo Zhu. "Theory of Dual-sparse Regularized Randomized Reduction". In *Proceedings of the 32nd International Conference on Machine Learning (ICML)*, 2015.

81. **Tianbao Yang**, Lijun Zhang, Rong Jin, Shenghuo Zhu. "An Explicit Sampling Dependent Spectral Error Bound for Column Subset Selection". In *Proceedings of the 32nd International Conference on Machine Learning (ICML)*, 2015.

82. Saining Xie*, **Tianbao Yang**, Xiaoyu Wang, Yuanqing Lin. "Hyper-class Augmented and Regularized Deep Learning for Fine-Grained Image Classification". In *Proceedings of the Conference of Computer Vision and Pattern Recognition (CVPR)*, 2015.

83. Lijun Zhang, **Tianbao Yang**, Rong Jin, Zhi-Hua Zhou. "A Simple Homotopy Algorithm for Compressive Sensing". In *Proceedings of the 18th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2015. (acceptance rate: 28.7%)

84. Lijun Zhang, **Tianbao Yang**, Rong Jin, Zhi-Hua Zhou. "Online Bandit Learning with Non-convex Losses". In *Proceedings of the 29th Conference on Artificial Intelligence (AAAI)*, 2015. (acceptance rate: 26.7%)

85. **Tianbao Yang**, Rong Jin. "Extracting Certainty from Uncertainty: Transductive Pairwise Classification from Pairwise Similarities". In *Proceedings of Advances in Neural Information Processing System 25 (NIPS)*, 262-270, 2014. (acceptance rate: 24.7%)

86. Jianhui Chen, **Tianbao Yang**, Shenghuo Zhu. "Efficient Low-Rank Stochastic Gradient Descent Methods for Solving Semidefinite Programs". In *Proceedings of the 17th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 122-130, 2014. (acceptance rate: 35.8%)

87. **Tianbao Yang**. "Trading Computation for Communication: Distributed Stochastic Dual Coordinate Ascent". In *Proceedings of Advances in Neural Information Processing System 24 (NIPS)*, 629-637, 2013. (acceptance rate: 25.3%)

88. Mehrdad Mahdavi, **Tianbao Yang**, Rong Jin. "Stochastic Convex Optimization with Multiple Objectives". In *Proceedings of Advances in Neural Information Processing System 24 (NIPS)*, 1115-1123, 2013. (acceptance rate: 25.3%)

89. Lijun Zhang, Mehrdad Mahdavi, Rong Jin, **Tianbao Yang**, Shenghuo Zhu. "Recovering Optimal Solution by Dual Random Projection". In *Proceedings of 26th Conference on Learning Theory (COLT)*, 135-157, 2013.

90. Lijun Zhang, **Tianbao Yang**, Rong Jin, Xiaofei He. "O(logT) Projections for Stochastic Optimization of Smooth and Strongly Convex Functions". In *Proceedings of 30th International Conference on Machine Learning (ICML)*, 1121-1129, 2013. (acceptance rate: 24%)

91. **Tianbao Yang**, Prakash Mandaym Comar, and Linli Xu. "Community Detection by Popularity Based Models for Authored Networked Data". In *Proceedings of IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, 74-81, 2013. (acceptance rate: 13%)

92. **Tianbao Yang**, Mehrdad Mahdavi, Rong Jin, Jinfeng Yi, Steven C.H. Hoi. "Online Kernel Selection: Algorithms and Evaluations". In *Proceedings of the 26th Conference on Artificial Intelligence (AAAI)*, 2012.

93. Chao-Kai Chiang, **Tianbao Yang***, Chia-Jung Lee, Mehrdad Mahdavi, Chi-Jen Lu, Rong Jin, Shenghuo Zhu. "Online Optimization with Gradual Variations". In *Proceedings of the 25th Conference on Learning Theory (COLT)*, 2012. (*Equal contributions.)

94. **Tianbao Yang**, Rong Jin, Mehrdad Mahdavi, Lijun Zhang, Yang Zhou. "Multiple Kernel learning from Noisy Labels by Stochastic Programming". In *Proceedings of the 29th International Conference On Machine Learning (ICML)*, 2012. (acceptance rate: 27.3%)

95. Ming Ji, **Tianbao Yang**, Binbin Lin, Rong Jin, Jiawei Han. "A Simple Algorithm for Semi-supervised Learning with Improved Generalization Error Bound". In *Proceedings of the 29th International Conference on Machine Learning (ICML)*, 2012. (acceptance rate: 27.3%)

96. Mehrdad Mahdavi, **Tianbao Yang**, Rong Jin, Shenghuo Zhu, Jinfeng Yi. "Stochastic Gradient Descent with Only One Projection". In *Proceedings of Advances in Neural Information Processing System 23 (NIPS)*, 503-511, 2012. (acceptance rate: 25%)

97. **Tianbao Yang**, Yu-Feng Li, Mehrdad Mahdavi, Rong Jin, Zhi-Hua Zhou. "Nystrom Method vs Random Fourier Features: A Theoretical and Empirical Comparison". In *Proceedings of Advances in Neural Information Processing System 23 (NIPS)*, 485-493, 2012. (acceptance rate: 25%)

98. Jinfeng Yi, Rong Jin, Anil Jain, Shaili Jain, **Tianbao Yang**. "Semi-Crowdsourced Clustering: Generalizing Crowd Labeling by Robust Distance Metric Learning". In *Proceedings of Advances in Neural Information Processing System 23 (NIPS)*, 1781-1789, 2012. (acceptance rate: 25%)

99. Jinfeng Yi, **Tianbao Yang**, Rong Jin, Anil Jain. "Robust Ensemble Clustering by Matrix Completion". In *Proceedings of 12nd International Conference on Data Mining (ICDM)*, 1176-1181, 2012. (acceptance rate: 20%)

100. Wei Tong, Fengjie Li, **Tianbao Yang**, Rong Jin, Anil Jain. "A Kernel Density Based Approach for Large Scale Image Retrieval". In *Proceedings of the 1st ACM International Conference on Multimedia Retrieval (ICMR)*, 2011.

101. Peilin Zhao, Steven Hoi, Rong Jin, **Tianbao Yang**. "Online AUC Maximization". In *Proceedings of the 28th International Conference on Machine Learning (ICML)*, 233-240, 2011. (acceptance rate: 26%)

102. **Tianbao Yang**, Rong Jin, Anil Jain. "Learning from Noisy Side Information by Generalized Maximum Entropy Model". In *Proceedings of the 27th International Conference on Machine Learning (ICML)*, 1199-1206, 2010. (acceptance rate: 26%)

103. **Tianbao Yang**, Rong jin, Anil Jain, Yang Zhou and Wei Tong. "Unsupervised Transfer Learning: Application to Text Categorization". In *Proceedings of the 16th ACM SIGKDD conference on Knowledge Discovery and Data Mining (KDD)*, 1159-1168, 2010. (acceptance rate: 17.4%)

104. Rong Jin, Steven C.H. Hoi, **Tianbao Yang**. "Online Multiple Kernel Learning: Algorithms and Mistake Bounds". In *Proceedings of the 21st International Conference on Algorithmic Learning Theory (ALT)*, 390-404, 2010.

105. **Tianbao Yang**, Yun Chi, Shenghuo Zhu, Yihong Gong, Rong Jin. "Directed Network Community Detection: A Popularity and Productivity Link Model". In *Proceedings of the 2010 SIAM International Conference on Data Mining (SDM)*, 742-753, 2010. (acceptance rate: 23.4%)

106. **Tianbao Yang**, Rong Jin, Yun Chi, Shenghuo Zhu. "Combining Link and Content for Community Detection-A Discriminative Approach". In *Proceedings of the 15th ACM SIGKDD international conference on Knowledge discovery and data mining (KDD)*, 927-936, 2009. (acceptance rate: 19.6%)

107. **Tianbao Yang**, Rong Jin, Yun Chi, Shenghuo Zhu. "A Bayesian framework for community detection integrating content and link". In *Proceedings of the 25th Conference on Uncertainty in Artificial Intelligence (UAI)*, 990-1001, 2009.

108. **Tianbao Yang**, Yun Chi, Shenghuo Zhu, Yihong Gong, Rong Jin. "A Bayesian Approach Toward Finding Communities and Their Evolutions in Dynamic Social Networks". In *Proceedings of the 2009 SIAM International Conference on Data Mining (SDM)*, 615-622, 2009. (acceptance rate: 15.7%)

PUBLICATIONS

Workshop Papers and Others

1. Mingrui Liu*, **Tianbao Yang**. "Stochastic Non-convex Optimization with Strong High Probability Second-order Convergence". In *NIPS workshop on Optimization for Machine Learning*, 2017.
2. Yi Xu*, Qihang Lin, **Tianbao Yang**. "Accelerate Stochastic Subgradient Method by Leveraging Local Error Bound". In *NIPS workshop on Optimization for Machine Learning*, 2016.
3. Zhuoning Yuan, Xun Zhou, **Tianbao Yang**, James Tamerius, Ricardo Mantilla. "Predicting Traffic Accidents Through Heterogeneous Urban Data: A Case Study". In 6th International Workshop on Urban Computing (UrbComp 2017) in conjunction with ACM KDD 2017.
4. **Tianbao Yang**, Qihang Lin. "Stochastic subGradient Methods with Linear Convergence for Polyhedral Convex Optimization." In *NIPS workshop on Optimization for Machine Learning*, 2015.
5. Adams Wei Yu, Qihang Lin, **Tianbao Yang**. "Doubly Stochastic Primal-Dual Coordinate Method for Regularized Empirical Risk Minimization with Factorized Data ." In *NIPS workshop on Optimization for Machine Learning*, 2015.
6. Zhe Li*, **Tianbao Yang**, Lijun Zhang, Rong Jin. "A Two-stage Approach for Learning a Sparse Model with Sharp Excess Risk Analysis ." In *NIPS workshop on Learning from Easy Data*, 2015.
7. Syed Shabih Hasan, Ryan B. Brummet, Octav Chipara, Yu-Hsiang Wu, **Tianbao Yang**. "In-situ Measurement and Prediction of Hearing Aid Outcomes Using Mobile Phones". In *International Workshop on Smart and Connected Health (IWSCH 2015)*, 2015.
8. **Tianbao Yang**, Rong Jin, Yun Chi, Shenghuo Zhu. "Combining Link and Content for Community Detection". In *Encyclopedia of Social Network Analysis and Mining*, Springer Verlag, 190-201, 2014.
9. **Tianbao Yang**, Lei Wu, Piero Bonissone. "A Directed Inference Approach Towards Multi-class Multi-model Fusion". In *Proceedings of 11st International Workshop on Multiple Classifier System (MCS)*, 2013.
10. Mehrdad Mahdavi, **Tianbao Yang**, Rong Jin. "Online Decision Making Under Stochastic Constraints". In *NIPS workshop on Discrete Optimization in Machine Learning*, 2012.
11. Mehrdad Mahdavi, **Tianbao Yang**, Rong Jin. Online Stochastic Optimization with Multiple Objectives. In *NIPS workshop on Optimization for Machine Learning*, 2012.
12. **Tianbao Yang**, Rong Jin, Anil Jain. Learning Kernel Combination from Noisy Pairwise Constraints. In *IEEE SSP Workshop of Statistical Signal Processing*, 2012.

13. Wei Tong, **Tianbao Yang**, Rong Jin. Co-training For Large Scale Image Classification: An Online Approach. In *ICPR workshop on Analysis and Evaluation Large-Scale Multimedia*, 2010.

Softwares

1. LibAUC. `https://libauc.org/`. Downloads: 18,000+

Research Grants

1. Deep Learning for Fine-Grained Image Classification ($20,000), Research Fund from NEC Labs America, 2014 - 2015, PI.
2. Scaling up Distance Metric Learning for Large-scale Ultrahigh-dimensional data ($174,576), NSF CRII Program, 2015 - 2017, PI.
3. New Algorithms of Online Machine Learning for Big Data ($712,401), NSF Big Data Program, 2015 - 2018, PI, with Co-PI Padmini Srinivasan.
4. Machine Learning for Personalized Asthma Exacerbation Prediction ($38,038), Pilot Grant, 2017 - 2018, the Environmental Health Sciences Research Center (EHSRC), PI, with Co-PI Thomas Peters, Philip Polgreen.
5. SCH: INT: Collaborative Research: A Framework for Optimizing Hearing Aids In Situ Based on Patient Feedback, Auditory Context, and Audiologist Input ($701,956). NSF Smart and Connected Health Program, 2018 - 2021, Co-PI, with PI Octav Chipara and Co-PI Yu-Hsiang Wu.
6. CAREER: Advancing Constrained and Non-Convex Learning ($529,066), NSF Career, 2019 - 2024. PI.
7. Research Award from Tencent AI Lab ($50,000), 2019 - 2020. PI.
8. Collaborative Research: Online Data Stream Fusion and Deep Learning for Virtual Meter in Smart Power Distribution Systems ($109,444), NSF, 2019 - 2022. PI, with Saeed Lotfifard (PI, WSU), Yinghui Wu (Co-PI, WSU)
9. Unrestricted Gift Fund from Alibaba Group ($200,000), 2018 - 2020. PI.
10. Collaborative Research: RI: Small: Robust Deep Learning with Big Imbalanced Data (Total: $500,000), NSF, 2021 - 2024. Lead PI, with Yiming Ying (Co-PI, UAlbany)
11. FAI: Advancing Optimization for Threshold-Agnostic Fair AI Systems (Recommended for Award, Total: $800,000). NSF, 2022 - 2025. Lead PI, with Qihang Lin (Co-PI, UI), Mingxuan Sun (Co-PI, LSU)
12. (Pending) 6 NSF grants.

Professional Service

Associate Editor

- Neurocomputing. Dec. 2016 - Present
- Mathematical Foundations of Computing. Feb. 2019 - Present

Senior Program Committee/Area Chair

- The International Conference on Machine Learning (ICML-23).
- Advances in Neural Information Processing System (NeurIPS-22).
- The International Conference on Machine Learning (ICML-22).
- 2022 International Joint Conference on Artificial Intelligence (IJCAI-22).
- The Thirty-six Conference on Artificial Intelligence (AAAI-22).
- Advances in Neural Information Processing System (NeurIPS-21).
- The International Conference on Machine Learning (ICML-21).
- The Thirty-fifth Conference on Artificial Intelligence (AAAI-21).
- The Thirty-fourth Conference on Artificial Intelligence (AAAI-20).
- 2020 International Joint Conference on Artificial Intelligence (IJCAI-20).
- 2019 International Joint Conference on Artificial Intelligence (IJCAI-19).

- The Thirty-third Conference on Artificial Intelligence (AAAI-19).
- The Twenty-Ninth Conference on Artificial Intelligence (AAAI-15).

Program Committee

- The Thirtieth Conference on Artificial Intelligence (AAAI-17).
- The Thirtieth Conference on Artificial Intelligence (AAAI-16).
- The Twenty-third International Conference on Artificial Intelligence (IJCAI 2013).
- ACM International Conference on Information and Knowledge Management (CIKM 2013).
- ACM International Conference on Information and Knowledge Management (CIKM 2012).
- The 2012 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT 2012).
- The Twenty-Sixth Conference on Artificial Intelligence (AAAI-12) , the Fourth Asian Conference on Machine Learning (ACML 2012).

Reviewer

- The 34st Annual Conference on Neural Information Processing Systems (NIPS 2020).
- The 35th International Conference on Machine Learning (ICML-19).
- The 21st International Conference on Artificial Intelligence and Statistics (AISTATS-18).
- The 34th International Conference on Machine Learning (ICML-18).
- The 31st Annual Conference on Neural Information Processing Systems (NIPS 2017)
- The 20th International Conference on Artificial Intelligence and Statistics (AISTATS-17).
- The 33rd International Conference on Machine Learning (ICML-17).
- The 30th Annual Conference on Neural Information Processing Systems (NIPS 2016)
- The 25th International Joint Conference on Artificial Intelligence (IJCAI 2016)
- The 22nd ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2016)
- The 33rd International Conference on Machine Learning (ICML 2016)
- The 19th International Conference on Artificial Intelligence and Statistics (AISTATS 2016)
- ACM Transactions on Knowledge Discovery from Data
- Asian Conference on Pattern Recognition, Information Sciences
- IEEE Transactions on Neural Networks
- Advances in Neural Information Processing System (NIPS) 2013
- Advances in Neural Information Processing System (NIPS) 2014.

TALKS

- X-risk Optimization: A New Paradigm for Deep Learning
  Invited Talks at Amazon, NEC Labs, Google, UTHealth, Queensland University.

- Deep AUC Maximization and Applications in Medical Imaging.
  Invited Talk at INFORMS.

- Deep AUC Maximization.
  Invited Talk at Google.

- Deep AUC Maximization and Applications in Medical Image Classification.
  Invited Talk at ISU Theoretical and Applied Data Science Seminar, 2020.

- Deep AUC Maximization and Applications in Medical Image Classification.
  Invited Talk at ICONIP, 2020.

- Deep AUC Maximization and Applications in Medical Image Classification.
  Invited Talk at RPI Mathematics Seminar, 2020.

- The Power of Stagewise Learning.
  Invited Talk at the workshop of Theory and Modeling of Deep Learning at Duke University, 2020.

- Stochastic Optimization for DC Functions and Non-smooth Non-convex Regularizers with Non-

asymptotic Convergence.
Invited Talk at the Sixth International Conference on Continuous Optimization (ICCOPT), 2019.

- Solving Weakly Monotone Variational Inequality and Its Application in GAN Training.
  Invited Talk at the Third International Conference on Mathematics of Data Science, 2019.

- Solving Weakly-convex Weakly-concave Saddle-point Problems as Successive Strongly Monotone Variational Inequalities.
  Invited Talk at the 3rd International Conference on Econometrics and Statistics (EcoSta), 2019.

- First-order Stochastic Algorithms for Escaping From Saddle Points in Almost Linear Time.
  Invited Talk at Peking University, 2018.

- First-order Stochastic Algorithms for Escaping From Saddle Points in Almost Linear Time.
  Invited Talk at ISMP 2018, Bordeaux.

- Fast Stochastic AUC Maximization with $O(1/n)$-Convergence Rate
  Oral Presentation Talk at ICML 2018.

- Level-Set Methods for Finite-Sum Constrained Convex Optimization.
  Oral Presentation Talk at ICML 2018.

- Faster Rates of Empirical Risk Minimization for Stochastic Convex Optimization.
  Invited Talk at University of Albany, 2017.

- Stochastic Convex Optimization: Faster Local Growth Implies Faster Global Convergence
  Invited Talk at SIAM Conference on Optimization, 2017

- Restarted Subgradient Methods.
  Invited Talk at INFORMS 2016.

- Restarted Subgradient Methods.
  Invited Talk at Baidu Research, Sunnyvale, 2016.

- Tracking Slowly Moving Clairvoyant: Optimal Dynamic Regret of Online Learning with True and Noisy Gradient.
  Oral Presentation Talk at ICML 2016.

- Big Data Analytics: Optimization and Randomization.
  Tutorial Talk at ACML 2015.

- Big Data Analytics: Optimization and Randomization.
  Tutorial Talk at KDD 2015.

- Theory of Dual-sparse regularized Randomized Reduction.
  Invited Talk at Nanjing University.

- Theory of Dual-sparse regularized Randomized Reduction.
  Invited Talk at University of Science and Technology of China.

- Theory of Dual-sparse regularized Randomized Reduction.
  Oral Presentation at ICML 2015.

- An Explicit Sampling Dependent Spectral Error Bound for Column Subset Selection.

Oral Presentation at ICML 2015.

- Distributed Optimization for Big Data Learning.
  Invited Talk at Statistic and Actuarial Science Department, University of Iowa, 2014.

- On Data Preconditioning for Regularized Loss Minimization.
  Invited Talk at MOPTA, Lehigh University, 2014.

- Stochastic Optimization for Big Data Analytics.
  Tutorial Talk at SIAM SDM 2014.

- Learning from Noisily Connected Data.
  Invited Talk at University of Science and Technology of China, Hefei, Anhui, China, 2013.

- A Kernel Density Based Approach for Large Scale Image Retrieval.
  Oral Presentation at the 1st ACM International Conference on Multimedia Retrieval (ICMR), Trento, Italy, 2011.

- Online Multiple Kernel Learning: Algorithms and Mistake Bounds.
  Oral Presentation at the 21st International Conference on Algorithmic Learning Theory (ALT), Canberra, Australia, 2010.

- Unsupervised Transfer Learning: Application to Text Categorization.
  Oral Presentation at the 16th ACM SIGKDD conference on Knowledge Discovery and Data Mining (KDD), Washington, DC, 2010.

- Directed Network Community Detection: A Popularity and Productivity Link Model.
  Oral Presentation at the 2010 SIAM International Conference on Data Mining (SDM), Columbus, Ohio, 2010.

Teaching

- Fall 2014, CS:4980, Introduction to Machine Learning
- Spring 2015, CS:3110, Introduction to Informatics
- Fall 2015, CS:3110, Introduction to Informatics
- Spring 2016, CS:4980, Machine Learning
- Fall 2016, CS:5110, Introduction to Informatics
- Spring 2017, CS:5430, Machine Learning
- Fall 2017, CS:3330, Algorithm
- Fall 2018, CS:3330, Algorithm
- Spring 2019, CS:5430, Machine Learning
- Spring 2020, CS:5430, Machine Learning
- Fall 2021, CS:5430, Machine Learning
- Fall 2022, CSCE:689, Large-scale Optimization for Machine Learning