

Tianbao Yang

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RESEARCH INTERESTS	Machine Learning, Optimization, and Application in Big Data Analytics	
AFFILIATIONS	Department of Computer Science, The University of Iowa Iowa Informatics Initiative Applied Mathematical and Computational Sciences Program	
APPOINTMENTS	Assistant Professor Department of Computer Science, The University of Iowa , Iowa City, IA	2014 - Present
	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 Advisor: Dr. Rong Jin	2012
	University of Science and Technology of China , Hefei, Anhui, China Bachelor of Engineering, Automation	2007
HONORS AND AWARDS	<ul style="list-style-type: none">• 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: <ol style="list-style-type: none">1. Lijun Zhang, Tianbao Yang, Rong Jin, Zhi-hua Zhou. Relative Error Bound Analysis for Nuclear Norm Regularized Matrix Completion. <i>Journal of Machine Learning Research (JMLR)</i>, 2019. (minor revision).2. Tianbao Yang, Qihang Lin. RSG: Beating Subgradient Method without Smoothness and/or Strong Convexity. <i>Journal of Machine Learning Research (JMLR)</i>, 2018.3. Tianbao Yang, Lijun Zhang, Rong Jin, Shenghuo Zhu, Zhi-Hua Zhou. A Simple Homotopy Proximal Mapping for Compressive Sensing. <i>Machine Learning</i>, 2018.4. Yongan Tang, Jianxin He, Xiaoli Gao, Tianbao Yang, Xiangqun Zeng. Continuous amperometric hydrogen gas sensing in ionic liquids. <i>Analyst</i>, 2018.5. Dixian Zhu, Changjie Cai, Tianbao Yang, Xun Zhou. A Machine Learning Approach for Air Quality Prediction: Model Regularization and Optimization. <i>Journal of Big Data and Cognitive Computing</i>, 2018.6. Jason Lee, Qihang Lin, Tengyu Ma, Tianbao Yang. "Distributed Stochastic Variance Reduced Gradient Methods and a Lower Bound for Communication Complexity". <i>Journal of Machine Learning Research</i>, 2017.	

7. **Tianbao Yang**, Rong Jin, Shenghuo Zhu, Qihang Lin. “On Data Preconditioning for Regularized Loss Minimization”. *Machine Learning*, pp 1-23, 2015.
8. 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.
9. **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.
10. **Tianbao Yang**, Mehrdad Mahdavi, Rong Jin, Shenghuo Zhu. “Regret Bound by Variation for Online Convex Optimization”. *Machine Learning*, 95(2): 183-223, 2014.
11. 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.
12. 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
13. Steven Hoi, Rong Jin, Peilin Zhao, **Tianbao Yang**. “Online Multiple Kernel Classification”. *Machine Learning*, 90(2): 289-316, 2012.
14. 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.
15. **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: (* supervised/mentored student)

1. Jian Ren, Zhe Li*, Jianchao Yang, Ning Xu, **Tianbao Yang**, David Foran. EIGEN: Ecologically-Inspired GENetic Approach for Neural Network Structure Searching from Scratch. Accepted by *2019 Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019. (acceptance rate: 25.2%).
2. Dixian Zhu*, Zhe Li*, Xiaoyu Wang, Boqing Gong, **Tianbao Yang**. A Robust Zero-Sum Game Framework for Pool-based Active Learning. Accepted by *The 22nd International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2019. (acceptance rate: 30%).
3. Zaiyi Chen*, Zhuoning Yuan*, Jinfeng Yi, Bowen Zhou, Enhong Chen, **Tianbao Yang**. Universal Stagewise Learning for Non-Convex Problems with Convergence on Averaged Solutions. Accepted by *the Seventh International Conference on Learning Representations (ICLR)*, 2019. (acceptance rate: 31%).
4. 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%).
5. 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%).
6. 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%).
7. 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%).

8. 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%)
9. 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%)
10. 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%).
11. 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%).
12. 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%).
13. 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%).
14. 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.
15. 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%).
16. Xiaotian Yu*, Irwin King, Michael R. Lyu, **Tianbao Yang**. A Generic Approach for Accelerating Stochastic Zeroth-Order Convex Optimization. In *Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI)*, 2018. (acceptance rate: 20%).
17. **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%).
18. 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%).
19. 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%).
20. 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%).
21. 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%).
22. 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%).
23. 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%).

24. 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%).
25. **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%).
26. 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%).
27. 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%).
28. 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%).
29. 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%).
30. 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%).
31. 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.
32. 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%).
33. 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%).
34. 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%).
35. **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%).
36. 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%).
37. 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%).
38. 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%).
39. 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.

40. **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.
41. **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.
42. 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.
43. 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%)
44. 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%)
45. **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%)
46. 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%)
47. **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%)
48. 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%)
49. 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.
50. Lijun Zhang, **Tianbao Yang**, Rong Jin, Xiaofei He. “ $O(\log T)$ 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%)
51. **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%)
52. **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.
53. 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.)
54. **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%)

55. 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%)
56. 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%)
57. **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%)
58. 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%)
59. 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%)
60. 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.
61. 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%)
62. **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%)
63. **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%)
64. 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.
65. **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%)
66. **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%)
67. **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.
68. **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.

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, 2019 - 2024. PI.

PROFESSIONAL
SERVICE

Associate Editor

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

Senior Program Committee

- 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 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

- 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