Yan Yan

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RESEARCH INTERESTS

Statistical machine learning and its application to computer vision and big data analytics.

EDUCATION EXPERIENCE

University of Technology Sydney, Ultimo, NSW, Australia — March, 2016 - November, 2018
Doctor of Philosophy in Information Systems
Supervisor: Professor Yi Yang

University of Technology Sydney, Ultimo, NSW, Australia — February, 2015 - March, 2016
Candidate for Master of Science in Computing Sciences
Supervisor: Professor Yi Yang

The University of Queensland, St Lucia, QLD, Australia — February, 2014 - February, 2015
Candidate for Master of Philosophy in Information Technology
Supervisor: Professor Yi Yang

Tianjin University, Tianjin, China — September, 2009 - July, 2013
B.E. in Computer Science and Technology

EMPLOYMENT EXPERIENCE

University of Iowa, Iowa City, IA, USA — September, 2018 - Present
Postdoc Research Associate
Supervisor: Professor Tianbao Yang

JD.com, Nanjing, Jiangsu, China — June, 2018 - September, 2018
Research Intern
Mentor: Dr. Jinfeng Yi

RESEARCH EXPERIENCE

- *Optimization algorithms for large-scale problems and its theoretical analysis*
  We designed efficient optimization algorithms for large-scale robust machine learning and theoretically analyzed their performance such as convergence rate of optimization and generalization error bounds. For example, variance regularization, distributionally robust optimization, deep metric learning, etc.

- *Computer vision applications*
  A massive volume of images and videos are created by users. To deal with large-scale vision data, especially deep neural networks, we proposed novel learning approaches and efficient optimization algorithms to achieve higher performance with less computational cost.

- *Semi-supervised learning*
  Collecting and labeling data is labour-intensive, so unlabeled data can be in large amount. We proposed semi-supervised learning methods to make use of unlabeled data to achieve improved prediction accuracy.

- *Recommendation system*
  Customers on online retailers often give 1-5 ratings, but most recommendation methods treat ratings as continuous numbers. We design a new model and a learning algorithm by taking advantage of discrete numbers to offer more accurate and personalized recommendation.

- *Multi-modal data analysis*
  Data are sometimes collected in various types and different types of data can be used together to promote prediction accuracy. We proposed new methods to take advantage of multi-modal data.

PUBLICATIONS **Preprints**

1. **Yan Yan**, Yi Xu, Qihang Lin, Lijun Zhang, Tianbao Yang. Stochastic Primal-Dual Algorithms with Faster Convergence than $1/\sqrt{T}$ for Problems without Bilinear Structure. *arXiv preprint arXiv:1904.10112(2019)*.

2. **Yan Yan**, Yi Xu, Lijun Zhang, Xiaoyu Wang, Tianbao Yang. Stochastic Optimization for Non-convex Inf-Projection Problems. *arXiv preprint arXiv:1908.09941 (2019)*.

3. Qi Qi, **Yan Yan**, Zixuan Wu, Xiaoyu Wang, Tianbao Yang. A Simple And Effective Framework for Pairwise Deep Metric Learning. *arXiv preprint arXiv:1912.11194 (2019)*.

Refereed Journal Publications

1. Yu Wu, Yutian Lin, Xuanyi Dong, **Yan Yan**, Wei Bian and Yi Yang. "Progressive Learning for Person Re-Identification With One Example." *IEEE Transactions on Image Processing*, vol. 28, no. 6, pp. 2872 - 2881, Jun. 2019.

2. Xuanyi Dong, **Yan Yan**, Mingkui Tan, Yi Yang and Ivor W. Tsang. "Late Fusion via Subspace Search With Consistency Preservation." *IEEE Transactions on Image Processing*, vol. 28, no. 1, pp. 518-528, Jan. 2019.

3. **Yan Yan**, Mingkui Tan, Ivor W. Tsang, Yi Yang, Qinfeng Shi and Chengqi Zhang. "Fast and Low Memory Cost Matrix Factorization: Algorithm, Analysis and Case Study." *IEEE Transactions on Knowledge and Data Engineering*. doi: 10.1109/TKDE.2018.2882197

4. **Yan Yan**, Feiping Nie, Wen Li, Chenqiang Gao, Yi Yang, Dong Xu. "Image Classification by Cross-Media Active Learning with Privileged Information." *IEEE Transactions on Multimedia*, vol. 18, no. 12 (2016): 2494-2502.

5. Yahong Han, Yi Yang, **Yan Yan**, Zhigang Ma, Nicu Sebe and Xiaofang Zhou. "Semi-Supervised Feature Selection via Spline Regression for Video Semantic Recognition." *IEEE Transactions on Neural Networks and Learning Systems*, vol. 26, no. 2 (2015): 252-264.

6. Xingzhong Du, **Yan Yan**, Pingbo Pan, Guodong Long and Lei Zhao. "Multiple Graph Unsupervised Feature Selection." *Signal Processing* 120 (2016): 754-760.

7. **Yan Yan**, Gaowen Liu, Sen Wang, Jian Zhang and Kai Zheng. "Graph-Based Clustering and Ranking for Diversified Image Search." *Multimedia Systems* 23, no. 1 (2017): 41-52.

8. Pufeng Du, Yang Tian and **Yan Yan**. "Subcellular localization prediction for human internal and organelle membrane proteins with projected gene ontology scores." *Journal of Theoretical Biology* 313 (2012): 61-67.

Refereed Conference Publications

1. Pingbo Pan, Ping Liu, **Yan Yan**, Tianbao Yang, Yi Yang. Adversarial Localized Energy Networks for Structured Prediction. In *Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI)* 2020.

2. Zhuoning Yuan, **Yan Yan**, Rong Jin, Tianbao Yang. Stagewise Training Accelerates Convergence of Testing Error Over SGD. In *Thirty-third Conference on Neural Information Processing Systems (NeurIPS)* 2019.

3. Zhibin Hu*, Yongsheng Luo*, Jiong Lin*, **Yan Yan** and Jian Chen. Multi-Level Visual-Semantic Alignments with Relation-Wise Dual Attention Network for Image and Text Matching. In *International Joint Conference on Artificial Intelligence (IJCAI)* 2019. (* indicates equal contribution)

4. Yanbin Liu, **Yan Yan**, Ling Chen, Yahong Han and Yi Yang. Adaptive Sparse Confidence-Weighted Learning for Online Feature Selection. In *Thirty-Third AAAI Conference on Artificial Intelligence (AAAI)* 2019.

5. Guoliang Kang, Liang Zheng, **Yan Yan**, and Yi Yang. Deep adversarial attention alignment for unsupervised domain adaptation: the benefit of target expectation maximization. In *Proceedings of the European Conference on Computer Vision (ECCV)* 2018.

6. **Yan Yan**, Tianbao Yang, Zhe Li, Qihang Lin and Yi Yang. A Unified Analysis of Stochastic Momentum Methods for Deep Learning. In *International Joint Conference on Artificial Intelligence (IJCAI)* 2018.

7. Xuanyi Dong, **Yan Yan**, Wanli Ouyang and Yi Yang. Style Aggregated Network for Facial Landmark Detection. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)* 2018.

8. Yu Wu, Yutian Lin, Xuanyi Dong, **Yan Yan**, Wanli Ouyang and Yi Yang. Exploit the Unknown Gradually: One-Shot Video-Based Person Re-Identification by Stepwise Learning. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)* 2018.

9. **Yan Yan**, Tianbao Yang, Yi Yang, Jianhui Chen. A Framework of Online Learning with Imbalanced Streaming Data. In *Thirty-First AAAI Conference on Artificial Intelligence (AAAI)* 2017.

10. Yi Xu*, **Yan Yan***, Qihang Lin, Tianbao Yang. Homotopy Smoothing for Non-Smooth Problems with Lower Complexity than $O(1/\epsilon)$. In *Neural Information Processing Systems (NeurIPS)* 2016.

11. **Yan Yan**, Zhongwen Xu, Ivor W. Tsang, Guodong Long, Yi Yang. Robust Semi-supervised Learning through Label Aggregation. In *Thirtieth Conference on Artificial Intelligence (AAAI)* 2016.

12. Mingkui Tan, **Yan Yan**, Li Wang, Anton Van Den Hengel, Ivor W. Tsang, Qinfeng (Javen) Shi. Learning Sparse Confidence-Weighted classifier on Very High Dimensional Data. In *Thirtieth Conference on Artificial Intelligence (AAAI)* 2016.

13. **Yan Yan**, Mingkui Tan, Ivor W. Tsang, Yi Yang, Chengqi Zhang and Qinfeng (Javen) Shi. Scalable Maximum Margin Matrix Factorization by Active Riemannian Subspace Search. In *International Joint Conference on Artificial Intelligence (IJCAI)* 2015, 3988-3994.

14. Joey Tianyi Zhou, Sinno Jialin Pan, Ivor W. Tsang and **Yan Yan**. Hybrid Heterogeneous Transfer Learning through Deep Learning. In *Twenty-Eighth Conference on Artificial Intelligence (AAAI)* 2014, 2213-2219.

Workshop Publications
1. **Yan Yan**, Yi Xu, Qihang Lin, Wei Liu, Tianbbao Yang. Sharp Analysis of Simple Restarted Stochastic Gradient Methods for Min-Max Optimization. In *Bridging Game Theory and Deep Learning Workshop NeurIPS 2019 (Smooth Games Optimization and Machine Learning Series)*.

AWARDS

- NSF I-Corps training grant — USD $2,500$.
- NeurIPS 2019 Travel Award.
- Higher Degree by Research publication award, FEIT, UTS, 2016.
- IEEE International Conference on Multimedia and Expo (ICME) Accurate and Fast Mobile Video Annotation Challenge, Rank 4, 2014.
- Outstanding Student Scholarship, Tianjin University, 2012.
- Outstanding Social Practice, Tianjin University, 2012.
- Outstanding student of Student Association of School of Computer Science, Tianjin University, 2011.

PROFESSIONAL SERVICE

Program Committee Members
The 34st AAAI Conference on Artificial Intelligence (AAAI 2020).
The 28th International Joint Conference on Artificial Intelligence (IJCAI 2019).
The 33rd AAAI Conference on Artificial Intelligence (AAAI 2019).
The 27th International Joint Conference on Artificial Intelligence (IJCAI 2018).

Reviewer
IEEE Transactions on Big Data
IEEE Transactions on Knowledge and Data Engineering
IEEE Transactions on Multimedia
IEEE Transactions on Circuits and Systems for Video Technology
Pattern Recognition, Elsevier
Multimedia Tools and Applications, Springer
Neurocomputing, Springer

TALKS   *Robust Machine Learning: from Min Problem to Min-Max And Min-Min Problem.*
               Statistics and Actuarial Science Research Colloquium, University of Iowa, 2019

TEACHING   Teaching Assistance: Spatial and Multimedia Databases (INFS4205), the University of Queensland,
               Autumn 2014.