Yingzhen Yang

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Education

- Department of Electrical and Computer Engineering
  University of Illinois at Urbana-Champaign 2011.1-2016.10
  Ph.D.
  GPA: 4.00/4.00
- Department of Electrical and Computer Engineering
  Carnegie Mellon University
  Ph.D. Student 2010.1-2010.12
  QPA: 4.00/4.00
- College of Computer Science and Technology
  Zhejiang University
  M.Eng. with honor (GPA: 3.96/4(90.7/100))
  B.Eng. (Major GPA: 3.92/4(88.7/100)) 2002.10-2009.12

Research Area

- Statistical Machine Learning, Deep Learning

Awards & Honors

- ICML Scholarship (Travel Award) 2016
- ECCV Best Paper Finalist (among 11 out of all submissions) 2016
- AAAI Best Poster/Best Presentation Finalist 2016
- AAAI Scholarship 2012
- Carnegie Institute of Technology Dean's Tuition Fellowship 2010
- "Lu Zeng Yong" CAD&CG High-Tech Award
  (for only six researchers in Computer-Aided Design and Computer Graphics all over China) 2009
- First Prize in Zhejiang Province Calculus Competition (ranked 1st over about 2,500 competitors all over Zhejiang Province, China) 2004
- First Prize in Zhejiang Province Calculus Competition 2003
- First Prize of National High School Mathematics Competition (Ranked 9th over more than 10,000 competitors in Hunan Province, China) 1999
- Bronze medal in National High School Mathematics Competition, China 1998,2000

Research Experience

- Research Scientist, Snap Research, Venice, CA Nov. 2016 to now
- Research Intern at Machine Learning Group, Microsoft Research at Redmond, WA May 2015 to Aug. 2015
  - Project: Large-Scale Online Parallel Probabilistic Topic Models for Large Scale Data
  - Mentor: Nebojsa Jojic
- Research Intern at eScience Group, Microsoft Research at Redmond, WA May 2014 to Aug. 2014
  - Project: Parallel Probabilistic Topic Models for Large Scale Data
  - Mentor: Nebojsa Jojic

- Research Intern, Hewlett-Packard Laboratories, Palo Alto, California May 2011 to Aug. 2011
  - Project: Efficient Markerless Augmented Reality
  - Mentor: Dan Gelb
- Graduate Research Assistant, University of Illinois at Urbana-Champaign Jan. 2011 to Now
  - Advisor: Thomas S. Huang

Recent Projects

Compact Architecture for Deep Convolutional Neural Networks (at Snap Inc. Research)
[CUDA C++/Python] 2017.10

- Developed 3D-FilterMap which learns a compact representation of the filters named 3D-FilterMap by weight sharing, instead of a set of independent filters in the conventional convolution layer of Convolutional Neural Networks (CNNs). CNNs with 3D-FilterMap enjoys a small parameter space while achieving performance comparable to the baseline CNNs. A special case of 3D-FilterMap for 1D CNNs was also developed to dramatically reduce the parameter space of the baseline 1D CNN (SoundNet) by up to 180 times with negligible performance loss on various benchmark data sets (paper link `https://openreview.net/pdf?id=H1I3M7Z0b`).

Deep Filter Panorama (ImageNet Competition)
[CUDA C/C++] 2015.11

- Deep Filter Panorama learns filter panorama instead of a set of independent filters in the deep convolutional neural networks. Our team "UIUCMSR", which used **Deep Filter Panorama for large scale scene classification in ImageNet Large Scale Visual Recognition Challenge (ILSVRC 2015), was invited by ILSVRC for poster presentation at the associated ICCV workshop. Media coverage:** `http://engineering.illinois.edu/news/article/14837`

Online Probabilistic Topic Models for Large Scale Data (at Microsoft Research Redmond)
[CUDA C/C++] 2015.5-2015.8

- Developed online probabilistic topic models for data representation, visualization and classification, and deployed the model for large-scale applications. This project was implemented by CUDA C/C++.

Parallel Probabilistic Topic Models for Large Scale Data (at Microsoft Research Redmond)
[CUDA C/C++] 2014.5-2014.8

- Developed parallelized and accelerated probabilistic topic models including Counting Grid and Componential Counting Grid for large-scale data representation and classification. This project was implemented by CUDA C/C++.

Publications

Under Preparation or Under Review:

1. **Yingzhen Yang**. Randomized Fast Lasso. To be submitted to ICML 2018
2. **Yingzhen Yang**. Online Low-Rank ℓ^0-Sparse Subspace Clustering. To be submitted to ICML 2018
3. **Yingzhen Yang**, Jianchao Yang, Ning Xu, Wei Han. Learning 3D-FilterMap for Deep Convolutional Neural Networks.
4. Xiaojie Jin, **Yingzhen Yang**, Ning Xu, Jianchao Yang, Jiashi Feng, Shuicheng Yan. WSNet: Learning Compact and Efficient Networks with Weight Sampling. Submitted

to International Conference on Learning Representations (ICLR) 2018 (Work by my research intern at Snap Inc. Research).

5. **Yingzhen Yang**, Jiashi Feng, Nebojsa Jojic, Thomas S. Huang. On Proximal Gradient Descent for ℓ^0 Sparse Approximation. Submitted to the Annual ACM Symposium on Theory of Computing (STOC) 2018.
6. **Yingzhen Yang**. Discriminative Similarity for Clustering and Semi-Supervised Learning. Submitted to Journal of Machine Learning Research (JMLR).
7. **Yingzhen Yang**, Jiashi Feng, Nebojsa Jojic, Jianchao Yang, Thomas S. Huang. Robust and Efficient ℓ^0-Sparse Subspace Clustering. Submitted to Proceeding of National Academy of Science (PNAS).

Book Chapters:

1. Zhaowen Wang, Jianchao Yang, Haichao Zhang, Zhangyang Wang, **Yingzhen Yang**, Ding Liu, Thomas S Huang. Sparse Coding and its Applications in Computer Vision. Published by World Scientific Publishing, ISBN: 978-981-4725-04-0

Journal:

1. **Yingzhen Yang**, Jiashi Feng, Nebojsa Jojic, Jianchao Yang, Thomas S. Huang. Learning Subspaces by ℓ^0-Induced Sparsity. Invited to International Journal of Computer Vision (IJCV) special issue on the best of European Conference on Computer Vision (ECCV) 2016.
2. Zhangyang Wang, **Yingzhen Yang**, Zhaowen Wang, Shiyu Chang, Jianchao Yang, Thomas S. Huang. Learning Super-Resolution Jointly from External and Internal Examples. IEEE Transactions on Image Processing, 24(11):4359-4371, 2015.
3. Shiyu Chang, Guo-Jun Qi, **Yingzhen Yang**, Charu C. Aggarwal, Jiayu Zhou, Meng Wang, Thomas S. Huang. Large-Scale Supervised Similarity Learning in Networks. Knowledge and Information Systems, 2015. (the conference version of this paper received **ICDM 2014 Best Student Paper Award**)

Conference&Workshop:

Machine Learning:

1. **Yingzhen Yang**. Dimensionality Reduced ℓ^0-Sparse Subspace Clustering. In Proc. of International Conference on Artificial Intelligence and Statistics (AISTATS) 2018.
2. **Yingzhen Yang**, Jiashi Feng, Nebojsa Jojic, Jianchao Yang, Thomas S. Huang. Efficient Proximal Gradient Descent for ℓ^0 Sparse Approximation. The Annual ACM Symposium on Theory of Computing (STOC) 2017 Workshop on New Challenges in Machine Learning - Robustness and Nonconvexity.
3. **Yingzhen Yang**, Jiashi Feng, Jiahui Yu, Jianchao Yang, Thomas S. Huang. Neighborhood Regularized ℓ^1-Graph. In Proc. of Conference on Uncertainty in Artificial Intelligence (UAI) 2017.
4. **Yingzhen Yang**, Jiahui Yu, Pushmeet Kohli, Jianchao Yang, Thomas S. Huang. Support Regularized Sparse Coding and Its Fast Encoder. In Proc. of International Conference on Learning Representations (ICLR) 2017.
5. **Yingzhen Yang**, Jiashi Feng, Nebojsa Jojic, Jianchao Yang, Thomas S. Huang. ℓ^0-Sparse Subspace Clustering. In Proc. of European Conference on Computer Vision (ECCV) 2016. (**Optimization Session Oral Presentation, Among 11 Best Paper Candidates.**)
6. **Yingzhen Yang**, Jianchao Yang, Wei Han, Thomas S. Huang. On the Sub-Optimality of Proximal Gradient Descent for ℓ^0 sparse approximation. In ICML 2016 workshop on Advances in Non-Convex Analysis and Optimization.
7. **Yingzhen Yang**, Zhangyang Wang, Zhaowen Wang, Shiyu Chang, Ding Liu, Honghui Shi, Thomas S. Huang. Epitomic Image Super-Resolution. In Proc. of AAAI Conference on Artificial Intelligence (AAAI) 2016. **Best Poster/Best Presentation Finalist for Student Poster Program**.

8. **Yingzhen Yang**, Zhangyang Wang, Jianchao Yang, Jiawei Han, Thomas S. Huang. Regularized ℓ^1-Graph for Data Clustering. In Proc. of British Machine Vision Conference (BMVC) 2014.
9. Zhangyang Wang, **Yingzhen Yang**, Shiyu Chang, Qing Ling, Thomas S. Huang. Learning A Deep ℓ_∞ Encoder for Hashing. In Proc. of International Joint Conferences on Artificial Intelligence (IJCAI) 2016.
10. Zhiding Yu, Weiyang Liu, Wenbo Liu, **Yingzhen Yang**, Ming Li and Vijayakumar Bhagavatula. On Order-Constrained Transitive Distance Clustering. In Proc. of AAAI Conference on Artificial Intelligence (AAAI) 2016.
11. Zhangyang Wang, **Yingzhen Yang**, Shiyu Chang, Jinyan Li, Simon Fong, Thomas S. Huang. A Joint Optimization Framework of Sparse Coding and Discriminative Clustering. In Proc. of International Joint Conferences on Artificial Intelligence (IJCAI) 2015.
12. **Yingzhen Yang**, Zhangyang Wang, Jianchao Yang, Thomas S. Huang. Data Clustering by Laplacian Regularized L1-Graph. In Proc. of AAAI Conference on Artificial Intelligence (AAAI) 2014.
13. **Yingzhen Yang**, Xinqi Chu, Zhangyang Wang, Thomas S. Huang. Nonparametric Maximum Margin Similarity for Semi-Supervised Learning. Advances in Neural Information Processing Systems (NIPS) 2014 workshop on Modern Nonparametrics: Automating the Learning Pipeline, spotlight talk.
14. **Yingzhen Yang**, Feng Liang, Shuicheng Yan, Zhangyang Wang, Thomas S. Huang. On a Theory of Nonparametric Pairwise Similarity for Clustering: Connecting Clustering to Classification. In Proc. of Advances in Neural Information Processing Systems (NIPS) 2014.
15. **Yingzhen Yang**, Xinqi Chu, Thomas S. Huang. Nonparametric Pairwise Similarity for Discriminative Clustering. Advances in Neural Information Processing Systems (NIPS) 2013 workshop on Modern Nonparametric Methods in Machine Learning, spotlight talk.
16. **Yingzhen Yang**, Xinqi Chu, Feng Liang, Thomas S. Huang. Pairwise Exemplar Clustering. In Proc. of AAAI Conference on Artificial Intelligence (AAAI) 2012.
17. Peter Liang, **Yingzhen Yang**, Yang Cai. Pattern Mining from Saccadic Motion Data. In Proc. of International Conference on Computational Science (ICCS), 2010.

Applications to Computer Vision & Computer Graphics:

1. **Yingzhen Yang**, Xinqi Chu, Tian-Tsong Ng, Alex Yong-Sang Chia, Hailin Jin, Thomas S. Huang. Epitomic Image Colorization. In Proc. of IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2014 (**Oral Presentation**).
2. **Yingzhen Yang**, Feng Liang, Thomas S. Huang. Discriminative Exemplar Clustering. In Proc. of IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2014.
3. **Yingzhen Yang**, Yang Cai. Virtual Gazing in Video Surveillance. ACM Multimedia Workshop on Surreal Media and Virtual Cloning, in conjunction with ACM Multimedia 2010.
4. **Yingzhen Yang**, Yin Zhu, Qunsheng Peng. Image Completion Using Structural Priority Belief Propagation. In Proc. of the ACM International Conference on Multimedia (ACM Multimedia) 2009.
5. **Yingzhen Yang**, Yin Zhu, Qunsheng Peng. Entertaining Video Warping. In Proc. of IEEE international conference on CAD/Graphics 2009.
6. **Yingzhen Yang**, Yichen Wei, Chunxiao Liu, Qunsheng Peng, Yasuyuki Matsushita. An Improved Belief Propagation Method for Dynamic Collage. The Visual Computer, 25(5-7):431-439, 2009.
7. Chunxiao Liu, **Yingzhen Yang**, Qunsheng Peng, Yanwen Guo. A New Distortion Minimization Approach for Image Completion based on a Large Displacement View. In Proc. of Computer Graphics International (CGI) 2008.

8. Chunxiao Liu, **Yingzhen Yang**, Qunsheng Peng, Jin Wang, Wei Chen. Distortion Optimization based Image Completion from a Large Displacement View. Computer Graphics Forum, 27(7): 1755-1764, 2008.
9. Chengfang Song, Yang Yu, **Yingzhen Yang**, Fazhi He, Qingzhu, Qunsheng Peng. Data-Driven Realistic Animation of Large-Scale Forest. Journal of Computer-Aided Design&Computer Graphics, Vol 20, No.8, 2008.

Technical Reports:

1. Dan Gelb, **Yingzhen Yang**, Mitch Trott. Efficient Markerless Augmented Reality. Submitted to HP Tech Con. 2012.
2. Yichen Wei, Yasuyuki Matsushita and **Yingzhen Yang**. Efficient Optimization of Photo Collage. Technical Report, Microsoft Research, MSR-TR-2009-59, May, 2009.

Professional Services

- Program Committee Member: International Joint Conferences on Artificial Intelligence (IJCAI) 2015, IJCAI 2017, IJCAI 2018, IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2018
- Reviewer: Journal of Machine Learning Research (JMLR), IEEE Transactions on Image Processing (TIP), Pattern Recognition (PR), Knowledge and Information Systems (KAIS), Machine Vision and Applications (Springer Journal)
- Reviewer and Organizer: ACM Multimedia Workshop on Surreal Media and Virtual Cloning, in conjunction with ACM Multimedia 2010

Skills

- Programming experiences in C, C++, CUDA C/C++, MATLAB, Python and Java, especially C++ (11 years of experience)
- Familiar with various deep learning platforms and software packages such as Torch, Pytorch and Caffe.

References

Prof. Thomas S. Huang
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Dr. Nebojsa Jojic
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London, United Kingdom pushmeet@google.com