

Yingzhen Yang

Research Scientist, Snapchat Research, Venice, CA 90291

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Education

- Department of Electrical and Computer Engineering
University of Illinois at Urbana-Champaign
Ph.D. Candidate Advisor: Prof. Thomas S. Huang 2011.1-2016.10
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

Awards & Honors

- ICML Scholarship (Travel Award) 2016
- AAI 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 "Hope Cup" National High School Mathematics Competition, China 1998,2000

Research Experience

- Research Scientist, Snapchat 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

Highlighted Projects

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

- I 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

- I 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++.

Efficient Markerless Augmented Reality (at Hewlett-Packard Laboratories)

[C/C++]

2011.5-2011.8

- I designed an efficient tracking by feature correspondence method to track several hundred corner points in real time for the Markerless Augmented Reality system. The tracking results were used for 3D reconstruction, camera pose estimation and virtual insertion.

Photo Browsing via Dynamic Collage (at Microsoft Research Asia)

[C/C++]

2008.2-2008.6

- I developed a new photo browsing technique called dynamic collage which allowed dynamic update of the canvas, so that the scalability was dramatically improved compared to traditional photo collage. The demo of the Dynamic Collage system is available at <http://research.microsoft.com/en-us/um/people/yichenw/collage/>.

Publications

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. 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.

2. 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**)
3. **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.
4. 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.
5. 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.

Conference:

1. **Yingzhen Yang**, Jiahui Yu, Pushmeet Kohli, Jianchao Yang, Thomas S. Huang. Support Regularized Sparse Coding and Its Fast Encoder. Submitted to International Conference on Learning Representations (ICLR) 2017.
2. **Yingzhen Yang**, Nebojsa Jojic, Jiashi Feng, Jianchao Yang, Thomas S. Huang. ℓ^0 -Sparse Subspace Clustering. In Proc. of European Conference on Computer Vision (ECCV) 2016. (**Oral Presentation, Among 11 Best Paper Candidates**)
3. **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.
4. 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.
5. Zhangyang Wang, Shiyu Chang, **Yingzhen Yang**, Ding Liu, Thomas S. Huang. Studying Very Low Resolution Recognition Using Deep Networks. In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2016.
6. Zhangyang Wang, Ding Liu, Shiyu Chang, **Yingzhen Yang**, Ling Qing, Thomas S. Huang. **D³**: Deep Dual-Domain Based Fast Restoration of JPEG-Compressed Images. In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2016.
7. 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.
8. 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.
9. **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.**
10. **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.
11. **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.
12. **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.

13. **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.
14. **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**).
15. **Yingzhen Yang**, Feng Liang, Thomas S. Huang. Discriminative Exemplar Clustering. In Proc. of IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2014.
16. **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.
17. **Yingzhen Yang**, Xinqi Chu, Feng Liang, Thomas S. Huang. Pairwise Exemplar Clustering. In Proc. of AAAI Conference on Artificial Intelligence (AAAI) 2012.
18. Peter Liang, **Yingzhen Yang**, Yang Cai. Pattern Mining from Saccadic Motion Data. In Proc. of International Conference on Computational Science (ICCS), 2010.
19. **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.
20. **Yingzhen Yang**, Yin Zhu, Qunsheng Peng. Entertaining Video Warping. In Proc. of IEEE international conference on CAD/Graphics 2009.
21. 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.

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.

Others:

1. **Yingzhen Yang**, Yang Cai. Virtual Gazing in Video Surveillance. ACM Multimedia Workshop on Surreal Media and Virtual Cloning, in conjunction with ACM Multimedia 2010.
2. Zhangyang Wang, **Yingzhen Yang**, Thomas S. Huang. Self-Tuned Deep Super Resolution. IEEE International Conference on Computer Vision and Pattern Recognition (CVPR) 2015 Workshop, DeepVision: Deep Learning in Computer Vision.
3. Zhangyang Wang, **Yingzhen Yang**, Jianchao Yang, Thomas S. Huang. Designing A Composite Dictionary Adaptively From Joint Examples. IEEE International Conference on Visual Communications and Image Processing (VCIP)2015.

Professional Services

- Program Committee Member: International Joint Conferences on Artificial Intelligence (IJCAI) 2015
- Reviewer: Journal of Machine Learning Research (JMLR), IEEE Transactions on Image Processing (TIP), 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++ (ten years of experience)
- Familiar with various deep learning platforms and software packages such as Caffe and cuda-convnet

References

Prof. Thomas S. Huang
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