YULUN ZHANG

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CONTACT INFORMATION

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RESEARCH INTERESTS

Machine Learning: deep learning.
Computer Vision: image/video restoration (e.g., super-resolution, denoising, deblurring), synthesis (e.g., style transfer, texture transfer), biomedical image analysis.

EDUCATION

Northeastern University, Boston, USA — Sep 2017 – Now

Ph.D., Department of ECE, College of Engineering

- Major in Computer Engineering
- Advisor: *Prof.* Yun Raymond Fu
- Overall GPA: 3.92/4.0

Tsinghua University, Beijing, China — Sep 2014 – Jul 2017

M.E., Department of Automation

- Major in Control Engineering
- Advisor: *Prof.* Yongbing Zhang
- Overall GPA: 3.73/4.0, Major GPA: 3.75/4.0

Xidian University, Xi'an, China — Sep 2009 – Jul 2013

B.S., School of Electronic Engineering

- Major in Intelligence Science and Technology
- Overall GPA: 3.36/4.0, Major GPA: 3.63/4.0

RESEARCH EXPERIENCE

SMILE lab, Northeastern University, Boston, USA — Sep 2017 – Now
Research Assistant — Supervisor: *Prof.* Yun Raymond Fu
Projects: Deep learning for image restoration and generation.

VCG, SEAS, Harvard University, Cambridge, USA — May 2020 – Now
Research Fellow — Supervisor: *Prof.* Hanspeter Pfister
Projects: Biomedical image restoration and analysis.

Adobe Research, San Jose, USA — Jun 2019 – Aug 2019
Research Intern Mentors: Zhifei Zhang, Stephen DiVerdi, Zhaowen Wang, Jose Echevarria
Projects: Painting super-resolution.

Adobe Research, San Jose, USA — May 2018 – Aug 2018
Research Intern Mentors: Chen Fang, Zhaowen Wang, Yilin Wang, Jimei Yang, Zhe Lin
Projects: Image style transfer.

Tsinghua University, China — Mar 2014 – Jul 2017
Research Assistant — Supervisor: *Prof.* Yongbing Zhang
Projects: Image super-resolution and compression artifact removal via sparse/collaborative representation and deep learning.

SIAT, Chinese Academy of Sciences, China — Oct 2016 – Jun 2017
Research Assistant — Supervisor: *Prof.* Yu Qiao
Projects: Generative adversarial networks (GAN) for image restoration/generation.

The University of Sydney, Sydney, Australia — Jan 2016 – Jun 2016
Visiting Student — Supervisor: *Prof.* Dong Xu and Prof. Wen Li
Projects: Research on metric learning with privileged information for visual recognition.

Nanyang Technological University, Singapore — Nov 2015 – Jan 2016
Project Officer — Supervisor: *Prof.* Dong Xu and *Prof.* Li Niu
Projects: Exploiting privileged information from web data for visual recognition.

Teaching

Instructor

- EECE5642 Data Visualization, Northeastern University, USA — Spring 2020
  Work as an independent instructor throughout the whole semester

Teaching Assistant

- EECE5639 Computer Vision, Northeastern University, USA — Fall 2018
  Instructor: *Prof.* Octavia Camps
- Modern Signal Processing, Tsinghua University, China — Fall 2015
  Instructor: *Prof.* Yongbing Zhang

Honors and Awards

- **Best Paper Award**, RLQ workshop, IEEE ICCV, 2019
- ICCV Travel Award, 2019
- ICLR Travel Award, 2019
- PhD Network Travel Grant, Northeastern University, USA, 2018, 2019
- Dean's Fellowship in Northeastern University, USA, 2017
- Shenzhen Universiade International Scholarship, China, 2017
- Excellent Graduate of Beijing, China, 2017
- Excellent Graduate of Department of Automation, Tsinghua University, 2017
- Excellent Master Thesis of Tsinghua University, 2017
- **Second Place Award**, NTIRE workshop, IEEE CVPR, 2017
- National Scholarship (Ministry of Education, China, Top 2%), 2016
- **Best Student Paper Award**, IEEE VCIP, 2015
- Jingzhi Research Award in Tsinghua University (Top 5%), 2015
- Second Prize Scholarship of Xidian University, 2011, 2012
- Third Prize Scholarship of Xidian University, 2010

Publications

*Citations: **2299**, h-index: **13**, i10-index: **13** (Google Scholar, Sep 5, 2020)*

- **Journal Papers**
  1 TPAMI, 1 TNNLS, 3 TIP, 2 TMM, 1 TSMC

1. **Yulun Zhang**, Yapeng Tian, Yu Kong, Bineng Zhong, and Yun Fu, "Residual Dense Network for Image Restoration", *IEEE Transactions on Pattern Analysis and Machine Intelligence* (**TPAMI**), 2020. (IF: 17.861, citations: 57+)

2. Qinqin Zhou, Bineng Zhong, Xiangyuan Lan, Gan Sun, **Yulun Zhang**, Baochang Zhang, and Rongrong Ji, "Fine-Grained Spatial Alignment Model for Person Re-Identication with Focal Triplet Loss", *IEEE Transactions on Image Processing* (**TIP**), 2020. (IF: 9.340)

3. Gan Sun, Yang Cong, **Yulun Zhang**, Guoshuai Zhao, and Yun Fu, "Continual Multi-view Task Learning via Deep Matrix Factorization", *IEEE Transactions on Neural Networks and Learning Systems* (**TNNLS**), 2020. (IF: 8.793)

4. Xiaole Zhao, **Yulun Zhang**, Tao Zhang, and Xueming Zou, "Channel Splitting Network for Single MR Image Super-Resolution", *IEEE Transactions on Image Processing* (**TIP**), 2019. (IF: 9.340)

5. Bineng Zhong, Bing Bai, Jun Li, **Yulun Zhang**, and Yun Fu, "Hierarchical Tracking by Reinforcement Learning based Searching and Coarse-to-fine Verifying", *IEEE Transactions on Image Processing* (**TIP**), 2019. (IF: 9.340)

6. Qinqin Zhou, Bineng Zhong, **Yulun Zhang**, Jun Li, and Yun Fu, "Deep Alignment Network Based Multi-person Tracking with Occlusion and Motion Reasoning", *IEEE Transactions Multimedia* (**TMM**), 2018. (IF: 6.051)

7. Yongbing Zhang, **Yulun Zhang***, Jian Zhang, Dong Xu, Yun Fu, Xiangyang Ji, and Qionghai Dai, "Collaborative Representation Cascade for Single Image Super-Resolution", *IEEE Transactions on Systems, Man, and Cybernetics: Systems* (**TSMC**), 2017. (IF: 9.309)

8. Yongbing Zhang, **Yulun Zhang***, Jian Zhang, and Qionghai Dai, "CCR: Clustering and Collaborative Representation for Fast Single Image Super-Resolution", *IEEE Transactions Multimedia* (**TMM**), 2016. (IF: 6.051, citations: 51+)

- **Conference Papers**
  4 CVPR, 3 ICCV, 3 ECCV, 1 ICLR, 1 AAAI, 1 IJCAI, 1 ACM MM, 1 VCIP

1. **Yulun Zhang**, Zhifei Zhang, Stephen DiVerdi, Zhaowen Wang, Jose Echevarria, and Yun Fu, "Texture Hallucination for Large-Factor Painting Super-Resolution", *European Conference on Computer Vision* (**ECCV**), 2020.

2. Xiaotong Luo, Yuan Xie, **Yulun Zhang**, Yanyun Qu, Cuihua Li, and Yun Fu, "LatticeNet: Towards Lightweight Image Super-resolution with Lattice Block", *European Conference on Computer Vision* (**ECCV**), 2020.

3. Kai Li, **Yulun Zhang**, Kunpeng Li, and Yun Fu, "Adversarial Feature Hallucination Networks for Few-Shot Learning", *IEEE Conference on Computer Vision and Pattern Recognition* (**CVPR**), 2020.

4. Yapeng Tian, **Yulun Zhang**, Yun Fu, and Chenliang Xu, "TDAN: Temporally Deformable Alignment Network for Video Super-Resolution", *IEEE Conference on Computer Vision and Pattern Recognition* (**CVPR**), 2020.

5. Xiaoyu Xiang, Yapeng Tian, **Yulun Zhang**, Yun Fu, Jan Allebach, and Chenliang Xu, "Zooming Slow-Mo: Fast and Accurate One-Stage Space-Time Video Super-Resolution", *IEEE Conference on Computer Vision and Pattern Recognition* (**CVPR**), 2020.

6. Yu Yin, Joseph Robinson, **Yulun Zhang**, and Yun Fu, "Joint Super-Resolution and Alignment of Tiny Faces", *The AAAI Conference on Artificial Intelligence* (**AAAI**), 2020.

7. **Yulun Zhang**, Chen Fang, Yilin Wang, Zhaowen Wang, Zhe Lin, Yun Fu, and Jimei Yang, "Multimodal Style Transfer via Graph Cuts", *IEEE International Conference on Computer Vision* (**ICCV**), 2019.

8. Kunpeng Li, **Yulun Zhang**, Kai Li, Yuanyuan Li, and Yun Fu, "Visual Semantic Reasoning for Image-Text Matching", *IEEE International Conference on Computer Vision* (**ICCV**), 2019. (**Oral, 4.3%**)

9. Kunpeng Li, **Yulun Zhang**, Kai Li, Yuanyuan Li, and Yun Fu, "Attention Bridging Network for Knowledge Transfer", *IEEE International Conference on Computer Vision* (**ICCV**), 2019.

10. Qinqin Zhou, Bineng Zhong, Xiangyuan Lan, Gan Sun, **Yulun Zhang**, Mengran Gou, "LRDNN: Local-refining based Deep Neural Network for Person Re-Identification with Attribute Discerning", *International Joint Conference on Artificial Intelligence* (**IJCAI**), 2019. (**Oral, 13.7%**)

11. **Yulun Zhang**, Kunpeng Li, Kai Li, Bineng Zhong, and Yun Fu, "Residual Non-local Attention Networks for Image Restoration", *International Conference on Learning Representations* (**ICLR**), 2019. (Citations: 81+)

12. **Yulun Zhang**, Kunpeng Li, Kai Li, Lichen Wang, Bineng Zhong, and Yun Fu,, "Image Super-Resolution Using Very Deep Residual Channel Attention Networks", *European Conference on Computer Vision* (**ECCV**), 2018. (Citations: 612+)

13. **Yulun Zhang**, Yapeng Tian, Yu Kong, Bineng Zhong, and Yun Fu, "Residual Dense Network for Image Super-Resolution", *IEEE Conference on Computer Vision and Pattern Recognition* (**CVPR**), 2018. (**Spotlight, 6.6%**, citations: 746+)

14. Kai Li, Zhengming Ding, Kunpeng Li, **Yulun Zhang**, and Yun Fu, "Support Neighbor Loss for Person Re-Identification", *ACM International Conference on Multimedia* (**ACM MM**), 2018.

15. **Yulun Zhang**, Yongbing Zhang, Jian Zhang, Haoqian Wang, and Qionghai Dai, "Adaptive Local Nonparametric Regression for Fast Single Image Super-Resolution", *IEEE International Conference on Visual Communications and Image Processing* (**VCIP**), 2015. (**Best Student Paper Award**)

- **Workshop Papers**
  1 CVPR Workshop, 1 ICCV Workshop

1. Can Qin, Lichen Wang, **Yulun Zhang**, and Yun Fu, "Generatively Inferential Co-Training for Unsupervised Domain Adaptation", *IEEE ICCV Real-World Recognition from Low-Quality Images and Videos (RLQ) workshop* (**ICCV Workshop**), 2019. (**Best Paper Award**)

2. Radu Timofte, ..., **Yulun Zhang**, ..., et al., "NTIRE 2017 Challenge on Single Image Super-Resolution: Methods and Results", *IEEE CVPR New Trends in Image Restoration and Enhancement workshop and challenge on image super-resolution* (**CVPR Workshop**), 2017. (**Second Place Award**)

- **Preprints**

1. Yiqun Mei, Yuchen Fan, **Yulun Zhang**, Jiahui Yu, Yuqian Zhou, Ding Liu, Yun Fu, Thomas S. Huang, Humphrey Shi, "Pyramid Attention Networks for Image Restoration", *arXiv preprint arXiv:2004.13824*, 2020

2. Yuchen Fan, Jiahui Yu, Yiqun Mei, **Yulun Zhang**, Yun Fu, Ding Liu, Thomas S Huang, "Neural Sparse Representation for Image Restoration", *arXiv preprint arXiv:2006.04357*, 2020

3. **Yulun Zhang**, Donglai Wei, Richard Schalek, Yuelong Wu, Stephen Turney, Jeff Lichtman, Hanspeter Pfister, Yun Fu, "Graph Reasoning Attention Network for High-Throughput Microscopy Image Deblurring", *In submission*, 2020

- **Patents**

1. Zhifei Zhang, **Yulun Zhang**, Stephen DiVerdi, Zhaowen Wang, and Jose Echevarria, "Texture Hallucination for Large-Scale Painting Super-Resolution", Filed by Adobe Systems Incorporated, 2020

2. Chen Fang, Zhe Lin, Zhaowen Wang, **Yulun Zhang**, Yilin Wang, and Jimei Yang, "Transferring Image Style to Content of a Digital Image", Filed by Adobe Systems Incorporated, 2019

3. Chen Fang, Zhe Lin, Zhaowen Wang, **Yulun Zhang**, Yilin Wang, and Jimei Yang, "Hierarchical Scale Matching and Patch Estimation for Image Style Transfer with Arbitrary Resolution", Filed by Adobe Systems Incorporated, 2019

Grant Proposal Writing

Major contributor in the preparation of the following research grant proposals:

1. *Co-writer*, "Generative Feature Transformation for Multi-viewed Domain Adaptation", Amazon AWS ML Research Award, 2020. ($105,000, PI: Yun Fu)
2. *Co-writer*, "Adobe Research Gift Funding", 2018 and 2019

Academic Service

Conference Reviewer

- IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
- International Conference on Computer Vision (ICCV)
- European Conference on Computer Vision (ECCV)
- International Conference on Learning Representations (ICLR)
- Neural Information Processing Systems (NeurIPS)
- AAAI Conference on Artificial Intelligence (AAAI)
- International Joint Conferences on Artificial Intelligence (IJCAI)
- International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)
- Winter Conference on Applications of Computer Vision (WACV)

Journal Reviewer

- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- International Journal of Computer Vision (IJCV)
- IEEE Transactions on Image Processing (TIP)
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- IEEE Transactions on Multimedia (TMM)
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
- IEEE Transactions on Computational Imaging (TCI)
- IEEE Transactions on Medical Imaging (TMI)
- Computer Vision and Image Understanding (CVIU)
- Neurocomputing (NEUCOM)
- Signal Processing (SIGPRO)
- Journal of Electronic Imaging (JEI)
- IEEE/CAA Journal of Automatica Sinica (JAS)
- The Visual Computer (TVCJ)

Invited Talks

- "Learning for image restoration and synthesis",
  Tsinghua University, Sep 2020
  Xidian University, Jul 2020
  Rochester Institute of Technology, May 2020
- "Residual dense network for image super-resolution",
  IEEE Conference on Computer Vision and Pattern Recognition, Salt Lake City, Utah, Jun 2018
- "Adaptive local nonparametric regression for fast single image super-resolution",
  IEEE International Conference on Visual Communications and Image Processing, Singapore, Dec 2015
- "Single image super-resolution via iterative collaborative representation",
  Pacific-Rim Conference on Multimedia, Gwangju, Korea, Sep 2015
- "Single depth image super resolution via a dual sparsity model",
  IEEE International Conference on Multimedia and Expo, Torino, Italy, Jun 2015

Skills

- Programming: Matlab, Python, Lua, C/C++, LaTeX, Visual Studio, OpenCV, Linux.
- Deep learning tools: PyTorch, TensorFlow, Caffe, Torch, Keras, MatConvNet.