

Richard Zhang

Email (rizhang@adobe.com) • Homepage • GitHub • Scholar
Last updated [Aug 2020]

RESEARCH SUMMARY

My research interests are in computer vision, deep learning, and graphics. More specifically, I am interested in using deep networks for image synthesis, as well as unsupervised learning and generative modeling.

INDUSTRIAL RESEARCH

Adobe Research

Research Scientist, San Francisco, CA
Research Intern, Seattle, WA

May 2018 – Present
May – Aug 2017

EDUCATION

University of California, Berkeley, Berkeley, CA

- Ph.D. in Electrical Engineering and Computer Sciences (EECS) Aug 2012 – May 2018
 - Thesis: Image Synthesis for Self-Supervised Visual Representation Learning
 - Advisor: Prof. Alexei A. Efros

Cornell University, Ithaca, NY

- M.Eng. in Electrical & Computer Engineering (ECE) Aug 2009 – May 2010
 - Cumulative GPA: 4.13 / 4.30
- B.S. in Electrical & Computer Engineering (ECE) Aug 2006 – Dec 2009
 - Cumulative GPA: 4.02 / 4.30, Summa Cum Laude, Dean's List all semesters

PUBLICATIONS

CONFERENCE

- [16] T. Park, A. A. Efros, R. Zhang, J.Y. Zhu. *Contrastive Learning for Unsupervised Image-to-Image Translation*. In *ECCV*, 2020.
- [15] M. Huh, R. Zhang, J.Y. Zhu, S. Paris, A. Hertzmann. *Transforming and Projecting Images into Class-conditional Generative Networks*. In *ECCV*, 2020 (oral).
- [14] P. Manocha, A. Finkelstein, R. Zhang, N. J. Bryan, G. J. Mysore, Z. Jin. *A Differentiable Perceptual Audio Metric Learned from Just Noticeable Differences*. In *Interspeech*, 2020.
- [13] S. Wang, O. Wang, R. Zhang, A. Owens, A. A. Efros. *CNN-generated images are surprisingly easy to spot...for now*. In *CVPR*, 2020 (oral).
- [12] D. Smirnov, M. Fisher, V. Kim, R. Zhang, J. Solomon. *Deep Parametric Shape Predictions using Distance Fields*. In *CVPR*, 2020.
- [11] N. Fish, R. Zhang, L. Perry, D. Cohen-Or, E. Shechtman, C. Barnes. *Image Morphing with Perceptual Constraints and STN Alignment*. In *CGF*, 2020.
- [10] S. Wang, O. Wang, A. Owens, R. Zhang, A. A. Efros. *Detecting Photoshopped Faces by Scripting Photoshop*. In *ICCV*, 2019.
- [9] A. Ghosh, R. Zhang, P. K. Dokania, O. Wang, A. A. Efros, P. H.S. Torr, E. Shechtman. *Interactive Sketch & Fill: Multiclass Sketch-to-Image Translation*. In *ICCV*, 2019.
- [8] R. Zhang. *Making Convolutional Networks Shift-Invariant Again*. In *ICML*, 2019.
- [7] R. Zhang, P. Isola, A. A. Efros, E. Shechtman, O. Wang. *The Unreasonable Effectiveness of Deep Features as a Perceptual Metric*. In *CVPR*, 2018.
- [6] J.Y. Zhu, R. Zhang, D. Pathak, T. Darrell, A. A. Efros, O. Wang, E. Shechtman. *Toward Multimodal Image-to-Image Translation*. In *NIPS*, 2017.
- [5] R. Zhang*, J.Y. Zhu*, P. Isola, X. Geng, A. S. Lin, T. Yu, A. A. Efros. *Real-Time User-Guided Image Colorization with Learned Deep Priors*. In *SIGGRAPH*, 2017. (*equal contribution)
- [4] R. Zhang, P. Isola, A. A. Efros. *Split-Brain Autoencoders: Unsupervised Learning by Cross-Channel Prediction*. In *CVPR*, 2017.
- [3] R. Zhang, P. Isola, A. A. Efros. *Colorful Image Colorization*. In *ECCV*, 2016 (oral).
- [2] R. Zhang, S. Candra, K. Vetter, A. Zakhor. *Sensor Fusion for Semantic Segmentation for Urban Scenes*. In *ICRA*, 2015.
- [1] R. Zhang and A. Zakhor. *Automatic Identification of Window Regions on Indoor Point Clouds Using LiDAR and Cameras*. In *WACV*, 2014.

PREPRINT

- [ii] T. Park, J.Y. Zhu, O. Wang, J. Lu, E. Shechtman, A. A. Efros, R. Zhang. *Swapping Autoencoder for Deep Image Manipulation*. In *ArXiv*, 2020.
- [i] A.X. Lee, R. Zhang, F. Ebert, P. Abbeel, C. Finn, S. Levine. *Stochastic Adversarial Video Prediction*. In *ArXiv*, 2018.

AWARDS**Paper Reviewing Recognitions**

- ECCV, top 215 reviewer Oct 2020
- NeurIPS, top 50% reviewer Dec 2019
- CVPR, outstanding reviewer Jul 2019

Best Presentation Award, SIGGRAPH Thesis Fast Forward Jul 2018**Adobe Research Fellowship** Jan 2017**William S. Einwechter Award**, Cornell University May 2010

- Presented to an outstanding senior who demonstrated distinguished record of service to School of ECE, College of Engineering and the university while maintaining academic performance

COMMUNITY SERVICE**AREA CHAIR**

Computer Vision and Pattern Recognition (CVPR) 2020, 2021

PAPERS REVIEWED

Computer Vision and Pattern Recognition (CVPR) 2018, 2019
 European Conference on Computer Vision (ECCV) 2018, 2020
 International Conference on Computer Vision (ICCV) 2017, 2019
 Neural Information Processing Systems (NIPS, NeurIPS) 2016, 2017, 2018, 2019, 2020
 International Conference in Machine Learning (ICML) 2019, 2020
 Special Interest Group in Graphics (SIGGRAPH) 2017, 2018, 2019
 Special Interest Group in Graphics, Asia (SIGGRAPH Asia) 2017, 2018, 2019
 International Conference on Robotics and Automation (ICRA) 2015, 2018
 International Journal of Computer Vision (IJCV) 2019
 Transactions in Pattern Analysis and Machine Intelligence (TPAMI) 2018
 Transactions in Image Processing (TIP) 2017, 2018
 Technical Committee on Vision and Graphics (TCVG) 2018
 Pacific Graphics 2018
 Eurographics 2019

WORKSHOP ORGANIZATION COMMITTEE

Advancements in Image Manipulation (AIM), at ICCV 2019 Nov 2019
 New Trends in Image Restoration and Enhancement (NTIRE), at CVPR 2019 Jul 2019

SELECTED PUBLICITY

Adobe MAX (Sneak Peek). *Project About Face*. Nov 2019
 The Verge. *Adobe's prototype AI tool automatically spots Photoshopped faces*. Jun 2019
 The New Yorker. *In the Age of A.I., Is Seeing Still Believing?* Nov 2018
 Gizmodo. *AI-Powered Software Makes It Incredibly Easy to Colorize Black and White Photos*. May 2017
 UK Times. *Computers give the past a blast of colour*. Apr 2016
 Reddit (front page). *Use deep learning algorithms to add color to black and white images*. Jun 2016
 TechCrunch. *This neural network 'hallucinates' the right colors into black and white pictures*. Mar 2016

INVITED PRESENTATIONS**Analyzing CNN Artifacts in Discriminative and Generative Models**

CVPR Area Chair Workshop Mar 2020

Making Convolutional Networks Shift-Invariant Again

Berkeley AI Research (BAIR) Seminar Aug 2019
 International Conference on Machine Learning (ICML) Jun 2019
 Google Research, Cambridge, MA May 2019

Modeling Perceptual Similarity and Shift-Invariance in Deep Networks

NAVER Labs, Tech talk Oct 2019
 University College London, Smart Geometry Processing Group seminar Oct 2019

Oxford University, VGG seminar Oct 2019
 Scale.AI, seminar talk Aug 2019
 Toyota Technological Institute of Chicago (TTIC), Young Researcher Talk May 2019
 Massachusetts Institute of Technology (MIT), Computer Vision Seminar Apr 2019

Deep Learning for Content Synthesis

Association for Content Editors (ACE) Tech Day with Adobe Sep 2019
 Hollywood Professional Association (HPA) Tech Retreat Feb 2019

Image Synthesis for Self-Supervised Visual Representation Learning

Stanford University, Graphics Group; University of Michigan, Computer Vision Group Jan 2019
 Berkeley Special Topics in Deep Learning Seminar, CS 294-131 Nov 2018
 SIGGRAPH 2018 Thesis Fast Forward (3 min) Jul 2018
 Berkeley AI Research (BAIR) Seminar, Dissertation Talk Apr 2018
 Alibaba Research; Amazon AI Deep Learning; DeepScale; Facebook AML; Fyusion; Mar 2018
 Google Research; Intel Intelligent Systems; NVIDIA Research
 Adobe Research; Allen Institute for AI (AI2); Amazon A9; Apple Turi; eBay Research; Feb 2018
 Snap Research; WaveOne

Multimodal Image-to-Image Translation

University of Washington, Graphics and Imaging Lab (GRAIL) Jul 2018

Real-Time User-Guided Image Colorization with Learned Deep Priors

Special Interest Group on Computer Graphics and Interactive Techniques (SIGGRAPH) Aug 2017
 NVIDIA SIGGRAPH Innovation Theater Aug 2017

Cross-Channel Visual Prediction

Graphics and Mixed Environment (GAMES) Webinar Oct 2017
 Global AI Hackathon Webinar Jun 2017
 Berkeley AI Research (BAIR) Seminar Apr 2017

Colorful Image Colorization

Berkeley AI Research (BAIR) Seminar Sep 2017
 European Conference on Computer Vision (ECCV) Oct 2016
 Oxford University; INRIA Paris; INRIA Sophia Antipolis; École des Ponts ParisTech Jun 2016

Sensor Fusion for Semantic Segmentation for Urban Scenes

Berkeley Deep Drive (BDD) Kickoff Mar 2016
 Amazon Computer Vision PhD Symposium Oct 2015
 International Conference on Robotics and Automation (ICRA) Mar 2015

Automatic Identification of Window Regions on Indoor Point Clouds Using LiDAR and Cameras

Winter Conference on Applications of Computer Vision (WACV) May 2014
 Microsoft Research (MSR) Computer Vision Group Jan 2014

TEACHING EXPERIENCE

Berkeley EECS Department

- CS 188 Intro to Artificial Intelligence, *Graduate Student Instructor* Jan – May 2017
 - Instructor: Prof. Anca Dragan
- CS 280 Computer Vision, *Graduate Student Instructor* Jan – May 2016
 - Instructor: Prof. Alexei A. Efros

Cornell ECE Department

- ECE 2100 Intro to Circuits, *Teaching Assistant* Jan – May 2010
 - Instructor: Prof. Alyosha Molnar
- ECE 2100 Intro to Circuits, *Course Assistant* Aug – Dec 2008
 - Instructor: Prof. John Belina

VOLUNTEER EXPERIENCE

Berkeley AI Research (BAIR) Mentorship Program, Mentor Aug – Dec 2017
Illinois Math and Science Academy (IMSA), Computer Vision Intersession Leader Jan 2014
Clarksville Middle School, Howard County Public School System, Volunteer Dec 2010 – May 2011

INDUSTRY EXPERIENCE

Johns Hopkins University Applied Physics Laboratory (JHU/APL), Laurel, MD Jul 2010 – Jul 2012

- Missile Defense Radar Engineering Group, Air & Missile Defense Dept (AMDD), *Staff Engineer*
- Electro-Optical & Infrared Systems and Technologies Group, AMDD

SKILLS Python, PyTorch, Caffe, GitHub, L^AT_EX

LANGUAGES **Chinese (Mandarin)** – Conversational