

Richard Zhang

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Last Updated [Sept 2019]

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.

RESEARCH EXPERIENCE

Adobe Research

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

May 2018 – Present
May – Aug 2017

University of California, Berkeley, Graduate Student Researcher, Berkeley, CA

- Computer Vision Group, PI: Prof. Alexei A. Efros
- Video & Image Processing Lab, PI: Prof. Avideh Zakhor

Jan 2015 – May 2018
Aug 2012 – Dec 2014

EDUCATION

University of California, Berkeley, Berkeley, CA

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

Aug 2012 – May 2018

Cornell University, Ithaca, NY

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

Aug 2009 – May 2010

Aug 2006 – Dec 2009

PUBLICATIONS

CONFERENCE

- [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 presentation).
- [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] D. Smirnov, M. Fisher, V. Kim, R. Zhang, J. Solomon. *Deep Parametric Shape Predictions using Distance Fields*. In *submission*, 2019.
- [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

- NeurIPS, top 50% reviewer
- CVPR, outstanding reviewer

Dec 2019
Jul 2019

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|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| | 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 | |
| TEACHING EXPERIENCE | Berkeley EECS Department | |
| | ▪ CS 188 Intro to Artificial Intelligence, <i>Graduate Student Instructor</i> | Jan – May 2017 |
| | • Instructor: Prof. Anca Dragan | |
| | ▪ CS 280 Computer Vision, <i>Graduate Student Instructor</i> | Jan – May 2016 |
| | • Instructor: Prof. Alexei A. Efros | |
| | Cornell ECE Department | |
| | ▪ ECE 2100 Intro to Circuits, <i>Teaching Assistant</i> | Jan – May 2010 |
| | • Instructor: Prof. Alyosha Molnar | |
| | ▪ ECE 2100 Intro to Circuits, <i>Course Assistant</i> | Aug – Dec 2008 |
| | • Instructor: Prof. John Belina | |
| COMMUNITY SERVICE | AREA CHAIR | |
| | Computer Vision and Pattern Recognition (CVPR) | 2020 |
| | PAPERS REVIEWED | |
| | Computer Vision and Pattern Recognition (CVPR) | 2018, 2019 |
| | European Conference on Computer Vision (ECCV) | 2016, 2018 |
| | International Conference on Computer Vision (ICCV) | 2017, 2019 |
| | Neural Information Processing Systems (NIPS, NeurIPS) | 2016, 2017, 2018, 2019 |
| | International Conference in Machine Learning (ICML) | 2019 |
| | 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 | 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 |
| INVITED PRESENTATIONS | <i>Making Convolutional Networks Shift-Invariant Again</i> | |
| | Berkeley AI Research (BAIR) Seminar | Aug 2019 |
| | International Conference on Machine Learning (ICML) | Jun 2019 |
| | Google Research, Cambridge, MA | May 2019 |
| | <i>Modeling Perceptual Similarity and Shift-Invariance in Deep Networks</i> | |
| | 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 |
| | <i>Deep Learning for Content Synthesis</i> | |
| | Association for Content Editors (ACE) Tech Day with Adobe | Sep 2019 |
| | Hollywood Professional Association (HPA) Tech Retreat | Feb 2019 |
| | <i>Image Synthesis for Self-Supervised Visual Representation Learning</i> | |
| | 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 |

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| | Alibaba Research; Amazon AI Deep Learning; DeepScale; Facebook AML; Fyusion; Google Research; Intel Intelligent Systems; NVIDIA Research | Mar 2018 |
| | Adobe Research; Allen Institute for AI (AI2); Amazon A9; Apple Turi; eBay Research; Snap Research; WaveOne | Feb 2018 |
| | 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) NVIDIA SIGGRAPH Innovation Theater | Aug 2017 Aug 2017 |
| | Cross-Channel Visual Prediction Graphics and Mixed Environment (GAMES) Webinar Global AI Hackathon Webinar Berkeley AI Research (BAIR) Seminar | Oct 2017 Jun 2017 Apr 2017 |
| | Colorful Image Colorization Berkeley AI Research (BAIR) Seminar European Conference on Computer Vision (ECCV) Oxford University; INRIA Paris; INRIA Sophia Antipolis; École des Ponts ParisTech | Sep 2017 Oct 2016 Jun 2016 |
| | Sensor Fusion for Semantic Segmentation for Urban Scenes Berkeley Deep Drive (BDD) Kickoff Amazon Computer Vision PhD Symposium International Conference on Robotics and Automation (ICRA) | Mar 2016 Oct 2015 Mar 2015 |
| | Automatic Identification of Window Regions on Indoor Point Clouds Using LiDAR and Cameras Winter Conference on Applications of Computer Vision (WACV) Microsoft Research (MSR) Computer Vision Group | May 2014 Jan 2014 |
| VOLUNTEER EXPERIENCE | Berkeley AI Research (BAIR) Mentorship Program, Mentor Illinois Math and Science Academy (IMSA), Computer Vision Intersession Leader Clarksville Middle School, Howard County Public School System, Volunteer | Aug – Dec 2017 Jan 2014 Dec 2010 – May 2011 |
| SELECTED PUBLICITY | The Verge. <i>Adobe’s prototype AI tool automatically spots Photoshopped faces.</i> The New Yorker. <i>In the Age of A.I., Is Seeing Still Believing?</i> Gizmodo. <i>AI-Powered Software Makes It Incredibly Easy to Colorize Black and White Photos.</i> UK Times. <i>Computers give the past a blast of colour.</i> Reddit (front page). <i>Use deep learning algorithms to add color to black and white images.</i> TechCrunch. <i>This neural network ‘hallucinates’ the right colors into black and white pictures.</i> | Jun 2019 Nov 2018 May 2017 Apr 2016 Jun 2016 Mar 2016 |
| INDUSTRY EXPERIENCE | Johns Hopkins University Applied Physics Laboratory (JHU/APL), Laurel, MD ▪ Missile Defense Radar Engineering Group, Air & Missile Defense Dept (AMDD), <i>Staff Engineer</i> ▪ Electro-Optical & Infrared Systems and Technologies Group, AMDD | Jul 2010 – Jul 2012 |
| SKILLS | Python, PyTorch, Caffe, GitHub, L ^A T _E X | |
| LANGUAGES | Chinese (Mandarin) – Conversational | |