

## Joon-Young Lee

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CONTACT INFORMATION	Adobe 345 Park Ave, A08-418 San Jose, CA 95110	<a href="https://joonyoung-cv.github.io/jolee@adobe.com">https://joonyoung-cv.github.io/jolee@adobe.com</a>
RESEARCH INTERESTS	<ul style="list-style-type: none"><li>• Computer Vision &amp; Deep Learning</li><li>• Video Processing and Understanding</li></ul>	
RESEARCH EXPERIENCE	<b>Adobe Research</b> , San Jose, CA <i>Senior Research Scientist</i> , Deep Learning Group, Creative Intelligence Lab <i>Research Scientist</i> , Deep Learning Group, Creative Intelligence Lab <i>Research Intern</i> , Imagination Lab <i>Research Intern</i> , Imagination Lab <b>Microsoft Research Asia</b> , Beijing, China <i>Research Intern</i> , Visual Computing Group <b>KAIST</b> , Daejeon, Korea <i>Research Assistant</i> , Robotics and Computer Vision Lab,	Jul 2019 – present Oct 2015 – Jun 2019 Mar 2015 – Apr 2015 Jun 2014 – Sep 2014 Sep 2010 – Aug 2011 Mar 2008 – Sep 2015
EDUCATION	<b>Ph.D.</b> , Electrical Engineering, KAIST, Daejeon, Korea <i>Dissertation: Photometric Approaches for Image Enhancement and Editing</i> <i>Advisors: Prof. In So Kweon</i> <b>M.S.</b> , Electrical Engineering, KAIST, Daejeon, Korea <i>Advisors: Prof. In So Kweon</i> <b>B.S.</b> , Electronic Engineering, Yonsei University, Seoul, Korea <i>High Honors at Graduation (GPA: 4.02/4.3)</i>	Aug 2015 Aug 2009 Feb 2008
PUBLICATIONS <small>(* INDICATES EQUAL CONTRIBUTION)</small>	<ol style="list-style-type: none"><li>1. Seoung Wug Oh, Joon-Young Lee, Ning Xu, Seon Joo Kim, “Space-time Memory Networks for Video Object Segmentation with User Guidance”, <i>IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)</i>, accepted</li><li>2. Seonguk Seo, Joon-Young Lee, Bohyung Han, “URVOS: Unified Referring Video Object Segmentation Network with a Large-Scale Benchmark”, <i>In Proc. of European Conference on Computer Vision (ECCV)</i>, 2020</li><li>3. Shubham Agarwal, Trung Bui, Joon-Young Lee, Ioannis Konostas, Verena Rieser, “History for Visual Dialog: Do we really need it?”, <i>In Proc. of Annual Meeting of the Association for Computational Linguistics (ACL)</i>, 2020</li><li>4. Dahun Kim, Sanghyun Woo, Joon-Young Lee, In So Kweon, “Video Panoptic Segmentation”, <i>In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)</i>, 2020</li><li>5. Juan Leon, Fabian Caba, Long Mai, Federico Perazzi, Joon-Young Lee, Pablo Arbelaez, Bernard Ghanem, “Active Speakers in Context”, <i>In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)</i>, 2020</li><li>6. Zijun Wei, Jianming Zhang, Zhe Lin, Joon-Young Lee, Niranjana Balasubramanian, Minh Hoai Nguyen, Dimitris Samaras, “Learning Visual Emotion Representations from Web Data”, <i>In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)</i>, 2020</li><li>7. Jongchan Park*, Sanghyun Woo*, Joon-Young Lee, In-So Kweon, “A Simple and Light-weight Attention Module for Convolutional Neural Networks”, <i>International Journal of Computer Vision (IJCV)</i>, 2020</li><li>8. Dahun Kim*, Sanghyun Woo*, Joon-Young Lee, In So Kweon, “Recurrent Temporal Aggregation Framework for Deep Video Inpainting”, <i>IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)</i>, 2020</li></ol>	

9. Seoung Wug Oh, Joon-Young Lee, Ning Xu, Seon Joo Kim, “Video Object Segmentation using Space-Time Memory Networks”, *In Proc. of IEEE International Conference on Computer Vision (ICCV)*, 2019 (**Oral**)
10. Seoung Wug Oh, Sungho Lee, Joon-Young Lee, Seon Joo Kim, “Onion-Peel Networks for Deep Video Completion”, *In Proc. of IEEE International Conference on Computer Vision (ICCV)*, 2019
11. Xin Ye, Zhe Lin, Joon-Young Lee, Jianming Zhang, Shibin Zheng, Yezhou Yang, “GAPLE: Generalizable Approaching Policy LEarning for Robotic Object Searching in Indoor Environment”, *IEEE Robotics and Automation Letters (RA-L, Proc. of IROS)*, 2019
12. Xingyu Liu, Joon-Young Lee, Hailin Jin, “Learning Video Representations from Correspondence Proposals”, *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019 (**Oral**)
13. Seoung Wug Oh, Joon-Young Lee, Ning Xu, Seon Joo Kim, “Fast User-Guided Video Object Segmentation by Interaction-and-Propagation Networks”, *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019
14. Dahun Kim\*, Sanghyun Woo\*, Joon-Young Lee, In So Kweon, “Deep Video Inpainting”, *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019
15. Dahun Kim\*, Sanghyun Woo\*, Joon-Young Lee, In So Kweon, “Deep Blind Video Decaptioning by Temporal Aggregation and Recurrence”, *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019
16. Jiyoung Jung, Joon-Young Lee, In So Kweon, “One-Day Outdoor Photometric Stereo Using Skylight Estimation”, *International Journal of Computer Vision (IJCV)*, 2019
17. Youngbae Hwang, Joon-Young Lee, In So Kweon, and Seon Joo Kim, “Probabilistic Moving Least Squares with Spatial Constraints for Nonlinear Color Transfer Between Images”, *Computer Vision and Image Understanding (CVIU)*, 2019
18. Sanghyun Woo\*, Jongchan Park\*, Joon-Young Lee, In So Kweon, “CBAM: Convolutional Block Attention Module”, *In Proc. of European Conference on Computer Vision (ECCV)*, 2018
19. Fabian Caba, Joon-Young Lee, Hailin Jin, Bernard Ghanem, “What do I Annotate Next? An Empirical Study of Active Learning for Action Localization”, *In Proc. of European Conference on Computer Vision (ECCV)*, 2018
20. Rameswar Panda, Jianming Zhang, Haoxiang Li, Joon-Young Lee, Xin Lu, Amit K. Roy-Chowdhury, “Contemplating Visual Emotions: Understanding and Overcoming Dataset Bias”, *In Proc. of European Conference on Computer Vision (ECCV)*, 2018
21. Wei-Chih Hung, Jianming Zhang, Xiaohui Shen, Zhe Lin, Joon-Young Lee, Ming-Hsuan Yang, “Learning to Blend Photos”, *In Proc. of European Conference on Computer Vision (ECCV)*, 2018
22. Inwook Shim, Tae-Hyun Oh, Joon-Young Lee, Dong-Geol Choi, Jinwook Choi, and In So Kweon, “Gradient-based Camera Exposure Control for Outdoor Mobile Platforms”, *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, 2018
23. Jongchan Park\*, Sanghyun Woo\*, Joon-Young Lee, In So Kweon, “BAM: Bottleneck Attention Module”, *In Proc. of British Machine Vision Conference (BMVC)*, 2018 (**Oral**)
24. Seoung Wug Oh, Joon-Young Lee, Kalyan Sunkavalli, Seon Joo Kim, “Fast Video Object Segmentation by Reference-Guided Mask Propagation”, *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018 (**Spotlight**)
25. Jongchan Park, Joon-Young Lee, Donggeun Yoo, In So Kweon, “Distort-and-Recover: Color Enhancement using Deep Reinforcement Learning”, *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018

26. Gyeongmin Choe, Seong-Heum Kim, Sunghoon Im, Joon-Young Lee, Srinivasa Narasimhan, and In So Kweon. "RANUS: RGB and NIR Urban Scene Dataset for Deep Scene Parsing", *IEEE Robotics and Automation Letters (RA-L)*, 2018
27. Zhuo Hui, Kalyan Sunkavalli, Joon-Young Lee, Sunil Hadap, Jian Wang, Aswin C. Sankaranarayanan, "Reflectance Capture using Univariate Sampling of BRDFs", *In Proc. of IEEE International Conference on Computer Vision (ICCV)*, 2017
28. Xuaner Zhang, Joon-Young Lee, Kalyan Sunkavalli, and Zhaowen Wang, "Photometric Stabilization for Fast-forward Videos", *Computer Graphics Forum (CGF, Proc of Pacific Graphics)*, Volume 36, Number 7, Pages 105-113, 2017
29. Yinda Zhang\*, Shuran Song\*, Ersin Yumer, Manolis Savva, Joon-Young Lee, Hailin Jin, Thomas Funkhouser, "Physically-Based Rendering for Indoor Scene Understanding Using Convolutional Neural Networks", *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017
30. Hao Hu, Zhaowen Wang, Joon-Young Lee, Zhe Lin, Guo-Jun Qi, "Temporal Domain Neural Encoder for Video Representation Learning", *IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, 2017
31. Jinwoong Jung, Beomseok Kim, Joon-Young Lee, Byungmoon Kim, Seungyong Lee, "Robust Upright Adjustment of 360 Spherical Panoramas", *The Visual Computer Journal (TVCJ, Proc. Computer Graphics International)*, Volume 33, Number 6–8, Pages 737–747, 2017
32. Jinwoong Jung, Joon-Young Lee, Byungmoon Kim, and Seungyong Lee, "Upright Adjustment of 360 Spherical Panoramas", *IEEE Virtual Reality (VR)* (Poster), 2017
33. Hae-Gon Jeon, Joon-Young Lee, Yudeog Han, Seon Joo Kim, and In So Kweon, "Generating Fluttering Pattern with Low Autocorrelation for Coded Exposure Imaging", *International Journal of Computer Vision (IJCV)*, Volume 123, Number 2, Pages 269–286, 2017
34. Youngjin Yoon, Hae-Gon Jeon, Donggeun Yoo, Joon-Young Lee, and In So Kweon, "Light Field Image Super-Resolution using Convolutional Neural Network", *IEEE Signal Processing Letters (SLP)*, Volume 24, Number 6, Pages 848–852, 2017
35. Hae-Gon Jeon, Joon-Young Lee, Yudeog Han, Seon Joo Kim, and In So Kweon, "Multi-Image Deblurring using Complementary Sets of Fluttering Patterns", *IEEE Transactions on Image Processing (TIP)*, Volume 26, Number 5, Pages 2311–2326, 2017
36. Seong-Heum Kim, Yu-Wing Tai, Joon-Young Lee, Jaesik Park, and In So Kweon, "Category-specific Salient View Selection via Deep Convolutional Neural Networks", *Computer Graphics Forum (CGF)*, Volume 36, Number 8, Pages 313–328, 2017
37. Youngjin Yoon, Gyeongmin Choe, Namil Kim, Joon-Young Lee, and In So Kweon, "Fine-scale Surface Normal Estimation using a Single NIR Image", *In Proc. of European Conference on Computer Vision (ECCV)*, 2016
38. Joon-Young Lee, Kalyan Sunkavalli, Zhe Lin, Xiaohui Shen, and In So Kweon, "Automatic Content-Aware Color and Tone Stylization", *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016 (**Spotlight**)
39. Hae-Gon Jeon, Joon-Young Lee, Sunghoon Im, Hyowon Ha, and In So Kweon, "Stereo Matching with Color and Monochrome Cameras in Low-light Conditions", *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016
40. Inwook Shim, Seunghak Shin, Yunsu Bok, Kyungdon Joo, Dong-Geol Choi, Joon-Young Lee, Jaesik Park, Jun-Ho Oh, and In So Kweon, "Vision System and Depth Processing for DRC-HUBO+", *In Proc. of IEEE International Conference on Robotics and Automation (ICRA)*, 2016
41. Donggeun Yoo, Sunggyun Park, Joon-Young Lee, Anthony Paek, and In So Kweon, "AttentionNet: Aggregating Weak Directions for Accurate Object Detection", *In Proc. of IEEE International Conference on Computer Vision (ICCV)*, 2015

42. Hae-Gon Jeon, Joon-Young Lee, Yudeog Han, Seon Joo Kim, and In So Kweon, “Complementary Sets of Shutter Sequences for Motion Deblurring”, *In Proc. of IEEE International Conference on Computer Vision (ICCV)*, 2015
43. Youngjin Yoon, Hae-Gon Jeon, Donggeun Yoo, Joon-Young Lee, and In So Kweon, “Learning a Deep Convolutional Network for Light-Field Image Super-Resolution”, *In Proc. of IEEE International Conference on Computer Vision Workshops (ICCVW)*, 2015
44. Jiyoung Jung, Joon-Young Lee, Yekeun Jeong, and In So Kweon, “Time-of-flight sensor calibration for a color and depth camera pair”, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, Volume 37, Number 7, Pages 1501–1513, 2015
45. Tae-Hyun Oh, Joon-Young Lee, Yu-Wing Tai, and In So Kweon, “Robust High Dynamic Range Imaging by Rank Minimization”, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, Volume 37, Number 6, Pages 1219–1232, 2015
46. Jiyoung Jung, Joon-Young Lee, and In So Kweon, “One-day outdoor photometric stereo via skylight estimation”, *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2015 (Oral)
47. Donggeun Yoo, Sunggyun Park, Joon-Young Lee, and In So Kweon, “Multi-scale Pyramid Pooling for Deep Convolutional Representation”, *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, 2015
48. Kibaek Park, Seunghak Shin, Hae-Gon Jeon, Joon-Young Lee, and In So Kweon, “Motion Deblurring using Coded Exposure for a Wheeled Mobile Robot”, *In Proc. of International Conference on Ubiquitous Robots and Ambient Intelligence (URAI)*, 2014
49. Yukyung Choi, Chaehoon Park, Joon-Young Lee, and In So Kweon, “Robust Binary Feature using the Intensity Order”, *In Proc. of Asian Conference on Computer Vision (ACCV)*, 2014
50. Inwook Shim, Joon-Young Lee, and In So Kweon, “Auto-adjusting Camera Exposure for Outdoor Robotics using Gradient Information”, *In Proc. of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2014
51. Youngbae Hwang\*, Joon-Young Lee\*, In So Kweon, and Seon Joo Kim, “Color Transfer using Probabilistic Moving Least Squares”, *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2014
52. Jiyoung Jung, Joon-Young Lee, and In So Kweon, “Noise aware depth denoising for a time-of-flight camera”, *In Proc. of Korea-Japan Joint Workshop on Frontiers of Computer Vision (FCV)*, 2014
53. Yudeog Han, Joon-Young Lee, and In So Kweon, “High Quality Shape from a Single RGB-D Image under Uncalibrated Natural Illumination”, *In Proc. of IEEE International Conference on Computer Vision (ICCV)*, 2013
54. Hae-Gon Jeon, Joon-Young Lee, Yudeog Han, Seon Joo Kim, and In So Kweon, “Fluttering Pattern Generation using Modified Legendre Sequence for Coded Exposure Imaging”, *In Proc. of IEEE International Conference on Computer Vision (ICCV)*, 2013
55. Joon-Young Lee, Jiyoung Jung, Yunsu Bok, Jaesik Park, Dong-Geol Choi, Yudeog Han, and In So Kweon, “Robust Computer Vision Techniques for High-quality 3D Modeling”, *In Proc. of IAPR Asian Conference on Pattern Recognition (ACPR)*, 2013
56. Tae-Hyun Oh, Joon-Young Lee, and In So Kweon, “High Dynamic Range Imaging by a Rank-1 Constraint”, *In Proc. of IEEE International Conference on Image Processing (ICIP)*, 2013
57. Joon-Young Lee, Yasuyuki Matsushita, Boxin Shi, In So Kweon, and Katsushi Ikeuchi, “Radiometric Calibration by Rank Minimization”, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, Volume 35, Number 1, Pages 144–156, 2013
58. Tae-Hyun Oh, Joon-Young Lee, and In So Kweon, “Real-Time Motion Detection based on Discrete Cosine Transform”, *In Proc. of IEEE International Conference on Image Processing (ICIP)*, 2012

59. Jaesik Park, Joon-Young Lee, Yu-Wing Tai, and In So Kweon, “Modeling Photo Composition and Its Application to Photo Re-arrangement”, *In Proc. of IEEE International Conference on Image Processing (ICIP)*, 2012
60. Joon-Young Lee, Boxin Shi, Yasuyuki Matsushita, In So Kweon, and Katsushi Ikeuchi, “Radiometric Calibration by Transform Invariant Low-rank Structure”, *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2011
61. Jiyoung Jung, Yekeun Jeong, Joon-Young Lee, Hanbyul Joo, and In So Kweon, “View-invariant Planar Object Detection for VisTRo”, *In Proc. of International Conference on Ubiquitous Robots and Ambient Intelligence (URAI)*, 2010
62. Jiyoung Jung, Yekeun Jeong, Joon-Young Lee, and In So Kweon, “Image Warping for View-invariant Object Matching using Stereo Camera”, *In Proc. of Korea-Japan Joint Workshop on Frontiers of Computer Vision (FCV)*, 2010

**HONORS &  
AWARDS**

- 1st (interactive track) / 4th (semi-supervised track) in the DAVIS Challenge 2019 Jun 2019
- GTC 2019 Top Poster Award Mar 2019
- Adobe MAX 2018 Sneak Demo [video link] Oct 2018
- 1st Place Award in ChalearnLAP Inpainting Challenge Track 2 – video decaptoning Sep 2018
- 1st Place Award in The Interactive DAVIS Challenge 2018 Jun 2018
- Best poster award, The 9th International Workshop on Robust Computer Vision Dec 2014
- Research Highlights of the year (2013), KAIST Mar 2014
- Qualcomm Innovation Award Sep 2013
- Research Highlights of the year (2012), KAIST Mar 2013
- Silver prize, 19th HumanTech Paper Award, Samsung Electronics Co., Ltd. Feb 2013
- Excellent intern award, Microsoft Research Asia Aug 2011
- High Honors at Graduation, Yonsei University Feb 2008
- Full scholarship, Jeongsu Scholarship Foundation Mar 2006 – Feb 2008
- Full scholarship, Yonsei Univerisity Mar 2005 – Feb 2006

**MEMBERSHIP &  
SERVICE**

**Area Chair**

- European Conference on Computer Vision (ECCV), 2020
- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2020
- International Conference on Computer Vision (ICCV), 2019

**Reviewer**

- Conference: CVPR (2016–2019), ICCV (2015, 2017), ECCV (2016, 2018), SIGGRAPH (2018), SIGGRAPH ASIA (2018), 3DV (2015, 2016), ACCV (2016), PG (2015), WACV (2015, 2016), ICRA (2017, 2019), IROS (2016)
- Journal: TPAMI, IJCV, TIP, CVIU, IPR

IEEE student member (2010–2015), IEEE member (2016–Present)

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