

## Joon-Young Lee

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CONTACT INFORMATION	Adobe 345 Park Ave, A08-419 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	<p><b>Adobe Research</b>, San Jose, CA <i>Senior Research Scientist</i>, Deep Learning Group, Creative Intelligence Lab Jul 2019 – present <i>Research Scientist</i>, Deep Learning Group, Creative Intelligence Lab Oct 2015 – Jun 2019</p> <p><b>Adobe Research</b>, San Jose, CA <i>Research Intern</i>, Imagination Lab Mar 2015 – Apr 2015 <i>Research Intern</i>, Imagination Lab Jun 2014 – Sep 2014</p> <p><b>Korea Electronics Technology Institute (KETI)</b>, Korea <i>(Part-time) Research Intern</i>, Multimedia IP Research Center Apr 2013 – May 2014</p> <p><b>Microsoft Research Asia</b>, Beijing, China <i>Research Intern</i>, Visual Computing Group Sep 2010 – Aug 2011</p> <p><b>KAIST</b>, Daejeon, Korea <i>Research Assistant</i>, Robotics and Computer Vision Lab, Mar 2008 – Sep 2015</p>	
EDUCATION	<p><b>KAIST</b>, Daejeon, Korea</p> <p>Ph.D., Electrical Engineering, Aug 2015</p> <ul style="list-style-type: none"><li>• Dissertation: Photometric Approaches for Image Enhancement and Editing</li><li>• Advisors: Prof. In So Kweon</li></ul> <p>M.S., Electrical Engineering, Aug 2009</p> <ul style="list-style-type: none"><li>• Advisor: Prof. In So Kweon</li></ul> <p><b>Yonsei University</b>, Seoul, Korea</p> <p>B.S., Electrical &amp; Electronic Engineering, Feb 2008</p> <ul style="list-style-type: none"><li>• <i>High Honors at Graduation</i> (GPA: 4.02/4.3)</li></ul>	
PUBLICATIONS	<p>(* INDICATES EQUAL CONTRIBUTION)</p> <ol style="list-style-type: none"><li>1. Seoung Wug Oh, Sungho Lee, Joon-Young Lee, Seon Joo Kim, “Onion-Peel Networks for Deep Video Completion”, <i>In Proc. of IEEE International Conference on Computer Vision (ICCV)</i>, 2019</li><li>2. Seoung Wug Oh, Joon-Young Lee, Ning Xu, Seon Joo Kim, “Video Object Segmentation using Space-Time Memory Networks”, <i>In Proc. of IEEE International Conference on Computer Vision (ICCV)</i>, 2019 (<b>Oral</b>)</li><li>3. 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”, <i>IEEE Robotics and Automation Letters (RA-L, Proc. of IROS)</i>, 2019</li><li>4. Xingyu Liu, Joon-Young Lee, Hailin Jin, “Learning Video Representations from Correspondence Proposals”, <i>In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)</i>, 2019 (<b>Oral</b>)</li><li>5. Seoung Wug Oh, Joon-Young Lee, Ning Xu, Seon Joo Kim, “Fast User-Guided Video Object Segmentation by Interaction-and-Propagation Networks”, <i>In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)</i>, 2019</li><li>6. Dahun Kim*, Sanghyun Woo*, Joon-Young Lee, In So Kweon, “Deep Video Inpainting”, <i>In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)</i>, 2019</li></ol>	

7. 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
8. Jiyoung Jung, Joon-Young Lee, In So Kweon, “One-Day Outdoor Photometric Stereo Using Skylight Estimation”, *IEEE Transactions on Image Processing (IJCV)*, 2019
9. 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
10. 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
11. 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
12. 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
13. 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
14. 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
15. Jongchan Park\*, Sanghyun Woo\*, Joon-Young Lee, In So Kweon, “BAM: Bottleneck Attention Module”, *In Proc. of British Machine Vision Conference (BMVC)*, 2018 (**Oral**)
16. 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
17. 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**)
18. 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
19. 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
20. 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
21. 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
22. 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-DV)*, 2017
23. Jinwoong Jung, Beomseok Kim, Joon-Young Lee, Byungmoon Kim, Seungyong Lee, “Robust Upright Adjustment of 360 Spherical Panoramas”, *The Visual Computer Journal (TVCI, Proc. Computer Graphics International)*, Volume 33, Number 6–8, Pages 737–747, 2017

24. Jinwoong Jung, Joon-Young Lee, Byungmoon Kim, and Seungyong Lee, “Upright Adjustment of 360 Spherical Panoramas”, *IEEE Virtual Reality (VR)* (Poster), 2017
25. 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”, *IEEE Transactions on Image Processing (IJCV)*, Volume 123, Number 2, Pages 269–286, 2017
26. 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
27. Hae-Gon Jeon, Joon-Young Lee, Yudeog Han, Seon Joo Kim, and In So Kweon, “Multi-Image Deblurring using Complementary Sets of Fluttering Patterns”, *International Journal of Computer Vision (TIP)*, Volume 26, Number 5, Pages 2311–2326, 2017
28. 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
29. 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
30. 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**)
31. 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
32. 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
33. 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
34. 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
35. 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
36. 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
37. 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
38. 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**)
39. 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

40. 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
41. 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
42. 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
43. 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
44. 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
45. 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
46. 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
47. 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
48. 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
49. 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
50. 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
51. 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
52. 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
53. 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
54. 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

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|---|----------|
| • 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 <a href="#">[video link]</a>                            | Oct 2018 |
| • 1st Place Award in ChalearnLAP Inpainting Challenge Track 2 – video decaptioning  | 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**

- 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, IPR

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

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