

Contact Information

Intel Labs
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Research Interests

Multiview Photometric Stereo
 Depth Map Upsampling/Completion
 Sceneflow Estimation
 Image Editing

Working Experiences

Staff Research Scientist, Intel Labs, Santa Clara, CA, USA - <i>Devoted to basic computer vision research</i>	Nov. 2015 – Present
Post-Doc Researcher, KAIST, Daejeon, Republic of Korea - <i>Developed efficient color correction algorithm for community photo collections</i>	Aug. 2015 – Nov. 2015
Research Intern, Microsoft Research, Redmond, WA, USA - <i>Developed a light calibration technique</i> (Mentor: Sudipta N. Sinha)	June 2013 – Sep. 2013
Research Intern, Microsoft Research Asia, Beijing, China - <i>Developed a multiview photometric stereo system</i> (Mentor: Yasuyuki Matsushita)	April 2012 – Oct. 2012

Education

Ph.D. in Electrical Engineering - KAIST, Daejeon, Republic of Korea Advisor: Prof. In So Kweon, Co-Advisor: Dr. Yu-Wing Tai Thesis: <i>Image-based 3D Modeling via Constrained Optimization</i> GPA : 4.09 / 4.3	Feb. 2011 – Aug. 2015
M.S. in Electrical Engineering - KAIST, Daejeon, Republic of Korea Advisor: Prof. In So Kweon Thesis: <i>Upsampling Low-Resolution Image using Heterogeneous High-Resolution Image</i> GPA : 4.06 / 4.3	Feb. 2009 – Feb. 2011
B.E. in Media Communication Eng., Hanyang Univ., Seoul, Republic of Korea Advisor: Prof. Sunwoo Kim Keystone Project: <i>High-speed data transfer using off-the-shelf light emitting diodes</i> GPA : 4.31 / 4.5 (<i>Summa cum laude</i>)	March 2005 – Feb. 2009

Publications

NOTE: Peer-reviewed premier conferences and journals in computer vision field are highlighted in bold.

International Journal —————

[IJ04] **Jaesik Park**, Sudipta N. Sinha, Yasuyuki Matsushita, Yu-Wing Tai, and In So Kweon, *Robust Multiview Photometric Stereo using Planar Mesh Parameterization*, IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), (Under minor revision)

[IJ03] Gyeongmin Choe, **Jaesik Park**, Yu-Wing Tai, and In So Kweon, *Refining Geometry from Depth Sensors using IR Shading Images*, International Journal of Computer Vision (**IJCV**), (Under major revision)

[IJ02] Seong-Heum Kim, Yu-Wing Tai, **Jaesik Park**, and In So Kweon,
Multi-view Object Extraction with Fractional Boundaries,
IEEE Transactions on Image Processing (**TIP**), April 2016 (IF. 3.63)

[IJ01] **Jaesik Park**, Hyeongwoo Kim, Yu-Wing Tai, Michael Brown, and In So Kweon,
High Quality Depth Map Upsampling and Completion for RGB-D cameras,
IEEE Transactions on Image Processing (**TIP**), Sep. 2014. (IF 3.63)

International Conference —————

[IC23] **Jaesik Park**, Yu-Wing Tai, Sudipta N. Sinha, and In So Kweon,
Efficient and Robust Color Consistency for Community Photo Collections,
IEEE International Conference on Computer Vision and Pattern Recognition (**CVPR**), June, 2016.

[IC22] Hyowon Ha, Sunghoon Im, **Jaesik Park**, Hae-Gon Jeon, and In So Kweon,
High-quality Depth from Uncalibrated Small Motion Clip, (Oral presentation)
IEEE International Conference on Computer Vision and Pattern Recognition (**CVPR**), June, 2016.

[IC21] I. Shim, S. Shin, Y. Bok, K. Joo, D.-G. Choi, J.-Y. Lee, **J. Park**, J. H. Oh, and I. S. Kweon,
Vision System and Depth Processing for DRC-HUBO+,
IEEE International Conference on Robotics and Automation (**ICRA**), 2016

[IC20] Hyowon Ha, **Jaesik Park**, and In So Kweon,
Dense Depth and Albedo from a Single-shot Structured Light,
International Conference on 3D Vision (**3DV**), Oct., 2015.

[IC19] Hae-Gon Jeon, **Jaesik Park**, Gyeongmin Choe, Jinsun Park, Yunsu Bok, Yu-Wing Tai, and In So Kweon,
Accurate Depth Map Estimation from a Lenslet Light Field Camera,
IEEE International Conference on Computer Vision and Pattern Recognition (**CVPR**), June, 2015.

[IC18] SoonMin Hwang, **Jaesik Park**, Namil Kim, Yukyung Choi, and In So Kweon,
Multi-modal Pedestrian Detection: Benchmark Dataset and Baselines,
IEEE International Conference on Computer Vision and Pattern Recognition (**CVPR**), June, 2015.

[IC17] Min-Hyun Kim, **Jaesik Park**, and In So Kweon,
RGBD Sensor and Mirrors: a Practical Setup for 3D Reconstruction of Dynamic Objects,
The 11th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI), Nov. 2014.

[IC16] Tae-Hyun Oh, Kyungdon Joo, Junsik Kim, **Jaesik Park**, and In So Kweon,
A Fusion Approach for Robust Visual Object Tracking in Crowd Scenes,
The 11th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI), Nov. 2014.

[IC15] Byungtae Ahn, **Jaesik Park**, and In So Kweon,
Real-time Head Orientation from a Monocular Camera using Deep Neural Network,
The 12th Asian Conference on Computer Vision (**ACCV**), Nov. 2014.

[IC14] Jinsoo Choi, Byungtae Ahn, **Jaesik Park**, and In So Kweon,
GMM-based Saliency Aggregation for Calibration-free Gaze Estimation,
IEEE International Conference on Image Processing (**ICIP**), Oct. 2014.

[IC13] **Jaesik Park**, Sudipta N. Sinha, Yasuyuki Matsushita, Yu-Wing Tai, and In So Kweon,
Calibrating a non-isotropic near point light source using a plane,
IEEE International Conference on Computer Vision and Pattern Recognition (**CVPR**), June, 2014.

[IC12] Gyeongmin Choe, **Jaesik Park**, Yu-Wing Tai, and In So Kweon,
Exploiting Shading Cues in Kinect IR Images for Geometry Refinement,
IEEE International Conference on Computer Vision and Pattern Recognition (**CVPR**), June, 2014.

[IC11] **Jaesik Park**, Sudipta N. Sinha, Yasuyuki Matsushita, Yu-Wing Tai, and In So Kweon,
Multiview Photometric Stereo using Planar Mesh Parameterization,
IEEE International Conference on Computer Vision (**ICCV**), Dec. 2013.

[IC10] 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*, IAPR Asian Conference on Pattern Recognition (ACPR), Nov. 2013.

[IC09] Jinsoo Choi, Byungtae Ahn, **Jaesik Park**, and In So Kweon, *Appearance-based Gaze Estimation using Kinect*, The 10th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI), Oct. 2013.

[IC08] **Jaesik Park**, Tae Hyun Oh, Jiyoung Jung, Yu-Wing Tai, and In So Kweon, *Tensor Voting Approach for Multi-View 3D Scene-flow Estimation and Refinement*, 12th European Conference on Computer Vision (ECCV), Oct. 2012.

[IC07] **Jaesik Park**, Joon-Young Lee, Yu-Wing Tai, and In So Kweon, *Modeling Photo Composition and Its Application to Photo Re-arrangement*, IEEE International Conference on Image Processing (ICIP), Sep. 2012.

[IC06] **Jaesik Park**, Yu-Wing Tai, and In-So Kweon, *Identigram/Watermark removal using cross-channel correlation*, IEEE International Conference on Computer Vision and Pattern Recognition (CVPR), June, 2012.

[IC05] Jiyoung Jung, Yekeun Jeong, **Jaesik Park**, Hyowon Ha, James Dokyoon Kim, and In-So Kweon, *A Novel 2.5D Pattern for Extrinsic Calibration of ToF and Camera Fusion System*, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Sep. 2011.

[IC04] **Jaesik Park**, Hyeongwoo Kim, Yu-Wing Tai, Michael S. Brown, and In-So Kweon, *High Quality Depth Map Upsampling for 3D-TOF Cameras*, The 13th International Conference on Computer Vision (ICCV), Nov. 2011.

[IC03] **Jaesik Park**, Yekeun Jeong, Chaehoon Park, and In-So Kweon, *Robust Detection of Small Objects in Cluttered Environment using Depth Cue*, The 7th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI), Nov. 2010

[IC02] Seunghak Shin, Jungho Kim, Jihong Min, **Jaesik Park**, and In-So Kweon, *Probabilistic Localization Using Sensor Fusion*, The 7th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI), Nov. 2010

[IC01] **Jaesik Park**, Yekeun Jeong, Chaehoon Park, and In-So Kweon, *Detecting Small Objects in Natural Scene using Depth Cue*, 16th Korea-Japan Joint Workshop on Frontiers of Computer Vision (FCV), Feb. 2010

Domestic Conference (in Korean)

[DC07] Hae-Gon Jeon, **Jaesik Park**, Gyeongmin Choe, Jinsun Park, Yunsu Bok, Yu-Wing Tai, and In So Kweon
마이크로 렌즈 기반의 휴대용 라이트필드 카메라를 이용한 정확한 깊이 정보 추정방법,
한국멀티미디어학회 춘계학술발표대회, May 2015 (**Received best paper award**)

[DC06] SoonMin Hwang, **Jaesik Park**, Namil Kim, Yukyung Choi, and In So Kweon
컬러-열영상 퓨전을 통한 강인한 보행자 검출 기법,
제 27회 영상처리 및 이해에 관한 워크샵 (IPIU), Feb. 2015

[DC05] Junsik Kim, Kyungdon Joo, Tae-Hyun Oh, **Jaesik Park**, and In So Kweon
시야 공유가 없는 다중 카메라를 이용한 사람 추적,
제 27회 영상처리 및 이해에 관한 워크샵 (IPIU), Feb. 2015 (**Invited talk**)

[DC04] Min-Hyun Kim, **Jaesik Park**, and In So Kweon
깊이 영상 처리를 위한 학습기반 신뢰도 추정 및 재질 분류,
제 27회 영상처리 및 이해에 관한 워크샵 (IPIU), Feb. 2015

[DC03] Gyeongmin Choe, **Jaesik Park**, Hyowon Ha, and In So Kweon,
키넥트 깊이 정밀도 개선을 위한 적외선 패턴 영상의 스테레오 정합,
2013년도 한국 멀티미디어 학회 춘계학술 발표대회 논문집 제 16권 1호, May, 2013

[DC02] **Jaesik Park**, Tae Hyun Oh, Jiyoung Jung, Yu-Wing Tai, and In So Kweon,
다시점 영상기반 3차원 움직임 추정기법,
제 25회 영상처리 및 이해에 관한 워크샵 (IPIU), Feb. 2013.

[DC01] **Jaesik Park**, Yu-Wing Tai, and In So Kweon,
컬러 영상의 홀로그램 및 워터마크 제거 기법,
제 25회 영상처리 및 이해에 관한 워크샵 (IPIU), Feb. 2013. **(Received best paper award)**

Patents

[DP04] 전경 추출 방법 및 장치 (Device and method for background subtraction), Patent No. 10-2015-0084331, Republic of Korea.

[DP03] 깊이 센서와 적외선 음영 영상을 이용한 고품질 3차원 정보 획득 장치 및 방법 (Device and method for obtaining accurate 3D information using depth sensor and infrared shading cues), Patent No. 10-2015-0020889, Republic of Korea.

[DP02] 가려짐이 있는 환경에서 이동 표적 위치 추정 방법 (Image based tracking method for occluded objects), Patent No. 1012883880000, Republic of Korea.

[DP01] 컬러 이미지의 채널간 상관관계를 이용하는 워터마크 제거 방법 (Watermark removal method using cross-channel correlation of color images), Patent No. 1013952840000, Republic of Korea.

Honors and Awards

NOTE: Awards with more than 3k US\$ are highlighted in bold.

- **Qualcomm Innovation Award**, Qualcomm Korea Corp. and KAIST, March 2016.
- Best Paper Award, 2015 Spring Annual Conference, Korea Multimedia Society, May 2015.
- Honor Prize, Annual Ph.D. Research Progress Evaluation, KAIST, May 2015.
- CVPR 2015 Doctoral Consortium, IEEE CVPR, April 2015.
- **Qualcomm Innovation Award**, Qualcomm Korea Corp. and KAIST, March 2015.
- Honor Prize, Annual Ph.D. Research Progress Evaluation, KAIST, May 2014.
- **20th HumanTech Paper Award (Silver Prize)**, Samsung Electronics Corp., Feb. 2014.
(삼성휴먼테크 논문대상 은상)
- Best Paper Award, 25th Workshop on Image Processing and Image Understanding (IPIU2013), Feb. 2013.
- **19th HumanTech Paper Award (Silver Prize)**, Samsung Electronics Corp., Feb. 2013.
(삼성휴먼테크 논문대상 은상)
- Excellent Intern Award, Microsoft Research Asia, Dec. 2012.
- Bronze Prize, Samsung Techwin research center conference, Feb. 2012.
- **Microsoft Research Asia Fellowship**, Microsoft Research Asia, Sep. 2011.
- Summa cum laude, Hanyang University, Feb. 2009.
- **Scholarship for Special Undergraduate Students**, The Korea Foundation for Advanced Studies (KFAS), April 2006 – March 2009. (한국고등교육재단 대학특별장학생)
- **Full scholarship**, Jeongsu Scholarship Foundation, Feb. 2006 – Aug. 2008. (정수장학회 대학장학생)
- **Full scholarship**, Hanyang University, Aug. 2005.

Research Projects

- Multi-camera human tracking system, Samsung Techwin Corp., since Oct. 2013 – Dec. 2014.
- I3D; Full 3D recovery, Electronics and Telecommunications Research Institute (ETRI), May 2011 – Oct. 2011
- *Developing a scene flow estimation method. Details are published in ECCV 2012*
- Removing holograms in scanned image of identification cards, Miru data system, Aug. 2010
- *Developing a hologram removing method. Details are published in CVPR 2012*
- Visual tracking in occluded scenes, Agency for Defense Development (ADD), June 2010 – Dec. 2012
- ToF depth map super-resolution, Samsung Advanced Institute of Technology (SAIT), June 2010 – Sep. 2011
- *Developing a depthmap upsampling method. Details are published in ICCV 2011*

- Vision based high-speed ballot counter, Miru data system, Feb. 2010 – May 2010.
- *The developed technology is used for **Korean pre-election in June 2014***
- Indoor/Outdoor navigation for intelligent robots, Samsung Techwin, July 2009 – Dec. 2010

Academic Activities

Journal Reviewer

- Transactions on Pattern Analysis and Machine Intelligence (TPAMI), IEEE
- Transactions on Image Processing (TIP), IEEE
- Signal Processing Letters, IEEE
- International Journal of Computer Vision (IJCV), Springer
- Journal of Mathematical Imaging and Vision, Springer
- Image and Vision Computing, Elsevier
- Journal on Image and Video Processing, EURASIP Journal
- Journal of Visual Communication and Image Representation, Elsevier
- Neurocomputing, Elsevier
- IPSJ Transactions on Computer Vision and Applications
- Sensors, MDPI Open access journal

Conference Reviewer

- IEEE International Conference on Computer Vision and Pattern Recognition (CVPR), 2014, 2015, 2016.
- International Conference on Computer Vision (ICCV), 2015
- The European Conference on Computer Vision (ECCV), 2012, 2016.
- International Conference on 3D Vision (3DV), 2015
- Asian Conference on Computer Vision (ACCV), 2016
- IEEE Winter Conference on Applications of Computer Vision (WACV), 2014.
- IEEE International Conference on Image Processing (ICIP), 2014.
- IAPR International conference on pattern recognition (ICPR), 2012.

Teaching Assistant in KAIST

- EE201 Circuit Theory (Spring 2010 – 2014)
- EE735 Computer Vision (Fall 2010 – 2014)

Other Experiences

- Student volunteer, Asian Conference on Computer Vision (ACCV 2012), Daejeon, Republic of Korea.
- Attended in International Computer Vision Summer School (ICVSS 2011), Sicily, Italy.
- Participated in Robot grand challenge 2009 and 2010 held in Pohang, Republic of Korea.

Skills

Programming languages: C/C++, Matlab, Python, Java
Libraries: OpenCV, OpenGL

References

Prof. In So Kweon

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Relationship: Master and Ph.D. advisor in KAIST

Dr. Yu-Wing Tai

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Relationship: Ph.D. co-advisor in KAIST