

Sunghoon Im

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| CONTACT INFORMATION | DGIST (Daegu Gyeongbuk Institute of Science and Technology) Department of Information and Communication Engineering E3-314, Techno jungang-daero 333, Hyeonpung-eup, Dalseong-gun, Daegu, Republic of Korea, 42988 | Tel.: +82-53-785-6323 E-mail: sunghoonim@dgist.ac.kr Homepage: https://cvlab.dgist.ac.kr/ |
| RESEARCH INTERESTS | Computer Vision (3D reconstruction/localization, Scene understanding) Deep Learning (Data-hungry, Generalization, Robustness) Applications - Autonomous driving, AR/VR | |
| ACADEMIC APPOINTMENTS | DGIST , Daegu, Korea <i>Assistant Professor</i> , Information and Communication Engineering | Sep 2019 – Present |
| | Carnegie Mellon University (CMU) , Pittsburgh, US <i>Visiting Scholar</i> , Robotics Institute, working with Prof. Martial Hebert and Prof. Jean Oh. | Jun 2019 – Aug 2019 |
| | Microsoft Research Asia (MSRA) , Beijing, China <i>Research Intern</i> , Internet Graphics Group, working with Dr. Stephen Lin. | Feb 2018 – Aug 2018 |
| | KAIST , Daejeon, Korea <i>Research Assistant</i> , Robotics and Computer Vision Lab., working with Prof. In So Kweon | Mar 2014 – Aug 2019 |
| EDUCATION | KAIST , Daejeon, Korea Ph.D., Electrical Engineering • Dissertation: "Robust 3D Imaging using a Single Hand-held Cameras" • Advisor: Prof. In So Kweon | Aug 2019 |
| | M.S., Electrical Engineering • Advisor: Prof. In So Kweon | Feb 2016 |
| | Sogang University , Seoul, Korea B.S., Electronic Engineering • Summa cum laude | Feb 2014 |
| PUBLICATIONS | International Journal <ol style="list-style-type: none">1. Hae-Gon Jeon, Sunghoon Im, Jaesung Choe, Minjun Kang, Joon-Young Lee, Martial Hebert, "CMSNet: Deep Color and Monochrome Stereo", <i>International Journal of Computer Vision (IJCV)</i>, Accepted.2. Hae-Gon Jeon, Sunghoon Im, Byeong-Uk Lee, Francois Rameau, Dong-Geol Choi, Jean Oh, In So Kweon, and Martial Hebert, "A Large-scale Virtual Dataset and Egocentric Localization for Disaster Responses", <i>IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)</i>, Accepted.3. Sunghoon Im, Hyowon Ha, Hae-Gon Jeon, Stephen Lin and In So Kweon, "Deep Depth from Uncalibrated Small Motion Clip", <i>IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)</i>, Apr 2021. | |

4. Hae-Gon Jeon, Jaeheung Surh, **Sunghoon Im** and In So Kweon, “Ring Difference Filter for Fast and Noise Robust Depth from Focus”, *IEEE Transactions on Image Processing (TIP)*, Dec 2020.
5. **Sunghoon Im**, Hae-Gon Jeon and In So Kweon, “Robust Depth Estimation using Auto-Exposure Bracketing”, *IEEE Transactions on Image Processing (TIP)*, May 2019.
6. **Sunghoon Im**, Hyowon Ha, Gyeongmin Choe, Hae-Gon Jeon, Kyungdon Joo and In So Kweon, “Accurate 3D Reconstruction from Small Motion Clip for Rolling Shutter Cameras”, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, Apr 2019.
7. 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 (RAL)*, Feb 2018.
8. Seunghak Shin, **Sunghoon Im**, Inwook Shim, Hae-Gon Jeon, and In So Kweon, “Geometry Guided 3D propagation for Depth from Small Motion”, *IEEE Signal Processing Letters (SPL)*, Dec 2017.

International Conference/Workshop

1. Jaesung Choe, **Sunghoon Im**, Francois Rameau, Minjun Kang, In So Kweon, “VolumeFusion: Deep Depth Fusion for 3D Scene Reconstruction”, *In Proc. of IEEE International Conference on Computer Vision (ICCV)*, Dec 2021.
2. Seunghun Lee, Sunghyun Cho, **Sunghoon Im**, “DRANet: Disentangling Representation and Adaptation Networks for Unsupervised Cross-Domain Adaptation”, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Jun 2021.
3. Jeonghoon Kim, **Sunghoon Im** and Sunghyun Cho, “ProFeat: Unsupervised Image Clustering via Progressive Feature Refinement”, *Workshop on Learning From Limited or Imperfect Data (CVPRw)*, Jun 2021.
4. Seokju Lee, **Sunghoon Im**, Stephen Lin and In So Kweon, “Learning Monocular Depth in Dynamic Scenes via Instance-Aware Projection Consistency”, *The Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI)*, Feb 2021.
5. Seokju Lee, **Sunghoon Im**, Stephen Lin and In So Kweon, “Instance-wise Depth and Motion Learning from Monocular Videos”, *Workshop on Machine Learning for Autonomous Driving & Workshop on Differentiable computer vision, graphics, and physics in machine learning (NeurIPSw)*, Dec 2020.
6. Hae-Gon Jeon, **Sunghoon Im**, Jean Oh and Martial Hebert, “Learning Shape-based Representation for Visual Localization in Extremely Changing Conditions”, *IEEE International Conference on Robotics and Automations (ICRA)*, May 2020.
7. Hae-Gon Jeon, **Sunghoon Im**, Byeong-Uk Lee, Dong-Geol Choi, Martial Hebert and In So Kweon, “DISC: A Large-scale Virtual Dataset for Simulating Disaster Scenarios”, *IEEE/RSJ International Conference on Intelligence Robots and System (IROS)*, Nov 2019.
8. Seokju Lee, **Sunghoon Im**, Stephen Lin and In So Kweon, “Learning Residual Flow as Dynamic Motion from Stereo Video”, *IEEE/RSJ International Conference on Intelligence Robots and System (IROS)*, Nov 2019.
9. **Sunghoon Im**, Hae-Gon Jeon, Stephen Lin and In So Kweon, “DPSNet: End-to-end Deep Plane Sweep Stereo”, *International Conference on Learning Representations (ICLR)*, May 2019.

10. Byeong-Uk Lee, Hae-Gon Jeon, **Sunghoon Im** and In So Kweon, "Depth Completion with Deep Geometry and Context Guidance", *IEEE International Conference on Robotics and Automations (ICRA)*, May 2019.
11. **Sunghoon Im**, Hae-Gon Jeon and In So Kweon, "Robust Depth Estimation from Auto Bracketed Images", *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Jun 2018.
12. Jaeheung Surh, Hae-Gon Jeon, Yunwon Park, **Sunghoon Im**, Hyowon Ha and In So Kweon, "Noise Robust Depth from Focus using a Ring Difference Filter", *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR) [Spotlight]*, Jul 2017.
13. **Sunghoon Im**, Hyowon Ha, Francois Rameau, Hae-Gon Jeon, Gyeongmin Choe and In So Kweon, "All-around Depth from Small Motion with A Spherical Panoramic Camera", *In Proc. of European Conference on Computer Vision (ECCV)*, Oct 2016.
14. Hyowon Ha, **Sunghoon Im**, Jaesik Park, Hae-Gon Jeon and In So Kweon, "High-quality Depth from Uncalibrated Small Motion Clip", *In Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR) [Oral]*, Jun 2016.
15. 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)*, Jun 2016.
16. **Sunghoon Im**, Hyowon Ha, Gyeongmin Choe, Hae-Gon Jeon, Kyungdon Joo and In So Kweon, "High Quality Structure from Small Motion for Rolling Shutter Cameras", *In Proc. of IEEE International Conference on Computer Vision (ICCV)*, Dec 2015.
17. **Sunghoon Im**, Gyeongmin Choe, Hae-Gon Jeon and In So Kweon, "Depth from Accidental Motion using Geometry Prior", *In Proc. of IEEE International Conference on Image Processing (ICIP) [Top 10% paper]*, Sep 2015.

Other Publications

1. Jaeheung Surh, Hae-Gon Jeon, Hyowon Ha, **Sunghoon Im** and In So Kweon, "Fast Depth from Defocus with Your Mobile Phone for Synthetic Defocus", *In Proc. of the 28th Workshop on Image Processing and Image Understanding (IPIU)*, Feb 2016.
2. **Sunghoon Im**, Hae-Gon Jeon, Hyowon Ha and In So Kweon, "Depth Estimation from Light Field Cameras", *In Proc. of the 12th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI)*, Oct 2015.
3. Dong-jin Kim, Donggeun Yoo, **Sunghoon Im**, Namil Kim, T. Sirinukulwattana and In So Kweon, "Relative Attributes with Deep Convolutional Neural Network", *In Proc. of the 12th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI)*, Oct 2015.

PATENTS

Registration

1. METHOD AND APPARATUS FOR ESTIMATING DEPTH USING RING DIFFERENCE FILTER, Publication date: Sep 28, 2018. (10-2017-0091717)
2. DEPTH MAP ACQUISITION DEVICE AND DEPTH MAP ACQUISITION METHOD, Publication date: Apr 19, 2018. (10-2016-0103546)
3. METHOD AND APPARATUS FOR ACQUIRING DEPTH MAP FROM ALL-AROUND CAMERA, Publication date: Apr 17, 2018. (10-2016-0167525)

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| | <p>4. DEPTH INFORMATION ACQUIRING DEVICE AND METHOD THEREOF, Publication date: Aug 11, 2017. (10-2016-0076766)</p> <p>5. APPARATUS AND METHOD FOR DEPTH MAP GENERATION, Publication date: Jun. 02, 2016. (10-2016-0015703)</p> | |
| TEACHING | <ul style="list-style-type: none"> • Artificial Intelligence Basics, Fall 2021. • Introduction to Deep Learning, Fall 2020, Fall 2021. • Deep Learning, Spring 2020. • Computer Vision, Fall 2019, Spring 2021. | |
| ACADEMIC SERVICES | <ul style="list-style-type: none"> • Editor - The Information and Communications Technology Express (ICT Express) • Local chair - International Technical Conference on Circuits/Systems, Computers and Communications (ITC-CSCC) | |
| REVIEWER (JOURNAL) | <ul style="list-style-type: none"> • International Journal of Computer Vision (IJCV) • Computer Vision and Image Understanding (CVIU) • Pattern Recognition (PR) • Neurocomputing • IEEE Robotics and Automation Letters (RAL) • IEEE Access • International Journal of Control, Automation and Systems (IJCAS) • IEIE Transactions on Smart Processing and Computing (IEIE SPC) • Journal of Institute of Control, Robotics and Systems (ICROS) | |
| REVIEWER (CONFERENCE) | <ul style="list-style-type: none"> • IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2019-2022 • IEEE International Conference on Computer Vision (ICCV) 2019 • European Conference on Computer Vision (ECCV) 2020 • Conference on Neural Information Processing Systems (NeurIPS) 2020-2021 • International Conference on Machine Learning (ICML) 2020-2021 • International Conference on Learning Representations (ICLR) 2021-2022 • Association for the Advancement of Artificial Intelligence (AAAI) 2020-2022 • IEEE International Conference on Robotics and Automations (ICRA) 2021 • IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2017 • Asian Conference on Computer Vision (ACCV) 2020 • IEEE Winter Conference on Applications of Computer Vision (WACV) 2020 • International Conference on 3D Vision (3DV) 2020 • International Conference on Machine Vision Applications (ICMVA) 2021 • International Conference on Control, Automation and Systems (ICCAS) 2020 | |
| INDUSTRY CONSULTATION | <ul style="list-style-type: none"> • DWorld, Feb-Mar 2021 • Dabeoo, Feb-Jun 2020 | |
| TUTORIAL | <ul style="list-style-type: none"> • Deep Learning for Computer Vision, DWorld, Jan-Feb 2021 • Multiple View Geometry, KETI Sangam, Aug-Oct 2020 | |
| INVITED TALKS | <ul style="list-style-type: none"> • Dongguk University, Seoul • 31st Signal Processing Joint Conference, IEIE, Online • 2nd Korea Artificial Intelligence Conference, Jeju • Kyungpook National University, Daegu • KCCV (Korean Conference on Computer Vision), Seoul • The Korean Institute of Broadcast and Media Engineers, Gyeongju | <p>Oct 2021</p> <p>Sep 2021</p> <p>Sep 2021</p> <p>Sep 2021</p> <p>Sep 2021</p> <p>Apr 2021</p> |

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| | <ul style="list-style-type: none"> • ETRI (Electronics and Telecommunications Research Institute), Daegu • ETRI (Electronics and Telecommunications Research Institute), Daejeon • ETRI (Electronics and Telecommunications Research Institute), Daegu • GIST • KETI (Korea Electronics Technology Institute), Sangam • POSTECH • KETI (Korea Electronics Technology Institute), Pangyo • DGIF (Daegu Technopolis Grand Innovation Festival) • ETRI (Electronics and Telecommunications Research Institute), Daejeon • Sogang University • Lunit • SAIT (Samsung Advanced Institute of Technology) • Koh Young Technology | <p>Mar 2021</p> <p>Oct 2020</p> <p>Oct 2020</p> <p>Jun 2020</p> <p>Jan 2020</p> <p>Dec 2019</p> <p>Nov 2019</p> <p>Oct 2019</p> <p>Sep 2019</p> <p>Sep 2019</p> <p>Aug 2019</p> <p>Apr 2019</p> <p>Jan 2019</p> |
| AWARDS | <ul style="list-style-type: none"> • Best Academic Award, DGIST • Excellent Student Award, 2018 Research Performance Evaluation, KAIST EE • Best Poster Award, 2018 Samsung AI Forum, Samsung Research • Excellent Intern Award, Microsoft Research Asia (MSRA) • Honor Student Award, 2017 Research Performance Evaluation, KAIST EE • Kim Choong-Ki Award, 2016 Research Performance Evaluation, KAIST EE • Best Poster Presentation Award, IPIU 2017 • Qualcomm Innovation Award 2016, Qualcomm Korea Corp. and KAIST • Silver prize, 22th HumanTech Paper Award, Samsung Electronics Co., Ltd. • Best Poster Award, IWRCV 2015 General Chair • Official Best 10% Paper Selection, ICIP 2015 Organizing Committee • Design Project Competition(Silver Prize), Sogang University • Prize for the top first percentile GPA, Sogang University | <p>Sep 2021</p> <p>Apr 2019</p> <p>Sep 2018</p> <p>Aug 2018</p> <p>Apr 2018</p> <p>Apr 2017</p> <p>Feb 2017</p> <p>Mar 2016</p> <p>Feb 2016</p> <p>Nov 2015</p> <p>Sep 2015</p> <p>Nov 2013</p> <p>Sep 2011, Feb 2012, Sep 2012</p> |
| HONORS | <ul style="list-style-type: none"> • NeurIPS 2020 Top 10% of high-scoring reviewer • CVPR 2019 Doctoral Consortium • ICLR 2019 Travel Award • Microsoft Research Asia (MSRA) fellowship 2018 Winner • Global Ph.D. Fellowship, National Research Foundation of Korea • International Computer Vision Summer School (ICVSS 2016), Sicily, Italy • Summa Cum Laude, Sogang University • Academic Excellence Scholarship, Sogang University • Scholarship, Korea Scholarship Foundation | <p>Oct 2020</p> <p>Jun 2019</p> <p>May 2019</p> <p>Oct 2018</p> <p>Aug 2016</p> <p>July 2016</p> <p>Feb 2014</p> <p>Seb 2012 – Feb 2013</p> <p>Feb 2012 – Feb 2014</p> |
| IT SKILLS | <ul style="list-style-type: none"> • Languages: Python, MATLAB, C, C++, \LaTeX • Deep Learning Framework: Pytorch, Torch, Tensorflow | |

Last Update: 2021/11/26