

Sunghoon Im

CONTACT INFORMATION DGIST (Daegu Gyeongbuk Institute of Science and Technology)
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RESEARCH INTERESTS

- Computer Vision (3D reconstruction, Computational photography)
- Machine Learning (Deep learning, AI for social good)
- Robot Vision (Sensor fusion, SLAM)

RESEARCH EXPERIENCES

DGIST, Daegu, Korea
Assistant Professor, Information and Communication Engineering Sep 2019 – Present

Carnegie Mellon University (CMU), Pittsburgh, US
Visiting Scholar, Robotics Institute Jun 2019 – Aug 2019

Microsoft Research Asia (MSRA), Beijing, China
Research Intern, Internet Graphics Group Feb 2018 – Aug 2018

KAIST, Daejeon, Korea
Research Assistant, Robotics and Computer Vision Lab. Mar 2014 – Aug 2019

EDUCATION

KAIST, Daejeon, Korea

Ph.D., Electrical Engineering, Mar 2016 - Aug 2019

- Dissertation: "Robust 3D Imaging using a Single Hand-held Cameras"
- Advisor: Prof. In So Kweon

M.S., Electrical Engineering, Feb 2016

- Advisor: Prof. In So Kweon

Sogang University, Seoul, Korea

B.S., Electronic Engineering, Feb 2014

- Summa cum laude

PUBLICATIONS

International Journal

1. **Sunghoon Im**, Hyowon Ha, Hae-Gon Jeon, Stephen Lin and In So Kweon, "Deep Depth from Uncalibrated Small Motion Clip", *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, Accepted.
2. 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.
3. **Sunghoon Im**, Hae-Gon Jeon and In So Kweon, "Robust Depth Estimation using Auto-Exposure Bracketing", *IEEE Transactions on Image Processing (TIP)*, May 2019.
4. **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.

5. 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.
6. 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.

Preprints

1. Seokju Lee, **Sunghoon Im**, Stephen Lin and In So Kweon, “Instance-wise Depth and Motion Learning from Monocular Videos”, ArXiv preprint, 2019.

International Conference

1. 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.
2. 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.
3. 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.
4. **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.
5. 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.
6. **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.
7. 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.
8. **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.
9. 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.
10. 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.

11. **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.
12. **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.

TEACHING

- Introduction to Deep Learning, 2020.
- Deep Learning, 2020.
- Computer Vision, 2019.

EDITOR

- The Information and Communications Technology Express (ICT Express)

REVIEWER (JOURNAL)

- International Journal of Computer Vision (IJCV)
- Computer Vision and Image Understanding (CVIU)
- Pattern Recognition (PR)
- Neurocomputing
- 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)

- IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2019, 2020
- IEEE International Conference on Computer Vision (ICCV) 2019
- European Conference on Computer Vision (ECCV) 2020
- Conference on Neural Information Processing Systems (NeurIPS) 2020
- International Conference on Machine Learning (ICML) 2020
- International Conference on Learning Representations (ICLR) 2021
- Association for the Advancement of Artificial Intelligence (AAAI) 2020, 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
- IEEE Winter Conference on Applications of Computer Vision (WACV), 2020

TUTORIAL

- Multiple View Geometry, KETI Sangam, Aug-Oct 2020

TALKS	<ul style="list-style-type: none"> • ETRI Daejeon, Oct 2020 • ETRI Daegu, Oct 2020 • GIST, Jun 2020 • KETI Sangam, Jan 2020 • Postech, Dec 2019 • KETI Pangyo, Nov 2019 • DGIF (Daegu Technopolis Grand Innovation Festival), Oct 2019 • ETRI Daejeon, Sep 2019 • Sogang University, Sep 2019 • Lunit, Aug 2019 • SAIT (Samsung Advanced Institute of Technology), Apr 2019 • Koh Young Technology, Jan 2019
AWARDS	<ul style="list-style-type: none"> • Excellent Student Award, 2018 Research Performance Evaluation, KAIST EE, Apr 2019 • Best Poster Award, 2018 Samsung AI Forum, Samsung Research, Sep 2018 • Excellent Intern Award, Microsoft Research Asia (MSRA), Aug 2018 • Honor Student Award, 2017 Research Performance Evaluation, KAIST EE, Apr 2018 • Kim Choong-Ki Award, 2016 Research Performance Evaluation, KAIST EE, Apr 2017 • Best Poster Presentation Award, IPIU 2017 Feb 2017 • Qualcomm Innovation Award 2016, Qualcomm Korea Corp. and KAIST Mar 2016 • Silver prize, 22th HumanTech Paper Award, Samsung Electronics Co., Ltd. Feb 2016 • Best Poster Award, IWRCV 2015 General Chair Nov 2015 • Official Best 10% Paper Selection, ICIP 2015 Organizing Committee Sep 2015 • Design Project Competition(Silver Prize), Sogang University Nov 2013 • Prize for the top first percentile GPA, Sogang University Sep 2011, Feb 2012, Sep 2012
HONORS	<ul style="list-style-type: none"> • CVPR 2019 Doctoral Consortium Jun 2019 • ICLR 2019 Travel Award May 2019 • Microsoft Research Asia (MSRA) fellowship 2018 Winner Oct 2018 • Global Ph.D. Fellowship, National Research Foundation of Korea Aug 2016 - Present (about 20K USD/year + Full scholarship for 2+1 years) • International Computer Vision Summer School (ICVSS 2016), Sicily, Italy July 2016 • Summa Cum Laude, Sogang University Feb 2014 • Academic Excellence Scholarship, Sogang University Sep 2012 – Feb 2013 • Scholarship, Korea Scholarship Foundation Feb 2012 – Feb 2014
IT SKILLS	<ul style="list-style-type: none"> • Languages: Python, MATLAB, C, C++, \LaTeX • Deep Learning Framework: Pytorch, Torch, Tensorflow

Last Update: 2020/10/08