Sunghoon Im

CONTACT INFORMATION	DGIST (Daegu Gyeongbuk Institute of Science and Technology)
	Department of Information and Communication Engineering Tel.: +82-53-785-6323
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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   Sep 2019 – Present

Assistant Professor, Information and Communication Engineering

Carnegie Mellon University (CMU), Pittsburgh, US   Jun 2019 – Aug 2019

Visiting Scholar, Robotics Institute, working with Prof. Martial Hebert and Prof. Jean Oh.

Microsoft Research Asia (MSRA), Beijing, China   Feb 2018 – Aug 2018

Research Intern, Internet Graphics Group, working with Dr. Stephen Lin.

KAIST, Daejeon, Korea   Mar 2014 – Aug 2019

Research Assistant, Robotics and Computer Vision Lab., working with Prof. In So Kweon

EDUCATION

KAIST, Daejeon, Korea

Ph.D., Electrical Engineering   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. Hae-Gon Jeon, **Sunghoon Im**, Byeong-Uk Lee, Franois Rameau, Dong-Geol Choi, Jean Oh, In So Kweon, and Martial Hebert, "A Large-scale Virtual Dataset and Egocentric Localization for Disaster Responses", *IEEE Transactions on Pattern Analysis and Machine Intelligence* (**TPAMI**), Accepted.

2. **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**), Apr 2021.

3. 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.

4. **Sunghoon Im**, Hae-Gon Jeon and In So Kweon, "Robust Depth Estimation using Auto-Exposure Bracketing", *IEEE Transactions on Image Processing* (**TIP**), May 2019.

5. **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.

6. 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.

7. 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**, Franois 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* & *Workhop 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)

4. DEPTH INFORMATION ACQUIRING DEVICE AND METHOD THEREOF, Publication date: Aug 11, 2017.   (10-2016-0076766)

5. APPARATUS AND METHOD FOR DEPTH MAP GENERATION, Publication date: Jun. 02, 2016.   (10-2016-0015703)

TEACHING	• Introduction to Deep Learning, Fall 2020, Fall 2021.
	• Deep Learning, Spring 2020.
	• Computer Vision, Fall 2019, Spring 2021.

ACADEMIC SERVICES	• Editor - The Information and Communications Technology Express (ICT Express)
	• Local chair - International Technical Conference on Circuits/Systems, Computers and Communications (ITC-CSCC)

REVIEWER (JOURNAL)	• 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)	• 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	• DWorld, Feb-Mar 2021
	• Dabeeo, Feb-Jun 2020

TUTORIAL	• Deep Learning for Computer Vision, DWorld, Jan-Feb 2021
	• Multiple View Geometry, KETI Sangam, Aug-Oct 2020

INVITED TALKS	• 31st Signal Processing Joint Conference, IEIE, Online	Sep 2021
	• 2nd Korea Artificial Intelligence Conference, Jeju	Sep 2021
	• Kyungpook National University, Daegu	Sep 2021
	• KCCV (Korean Conference on Computer Vision), Seoul	Sep 2021
	• The Korean Institute of Broadcast and Media Engineers, Gyeongju	Apr 2021
	• ETRI (Electronics and Telecommunications Research Institute), Daegu	Mar 2021
	• ETRI (Electronics and Telecommunications Research Institute), Daejeon	Oct 2020
	• ETRI (Electronics and Telecommunications Research Institute), Daegu	Oct 2020
	• GIST	Jun 2020
	• KETI (Korea Electronics Technology Institute), Sangam	Jan 2020
	• POSTECH	Dec 2019
	• KETI (Korea Electronics Technology Institute), Pangyo	Nov 2019
	• DGIF (Daegu Technopolis Grand Innovation Festival)	Oct 2019

	• ETRI (Electronics and Telecommunications Research Institute), Daejeon	Sep 2019
	• Sogang University	Sep 2019
	• Lunit	Aug 2019
	• SAIT (Samsung Advanced Institute of Technology)	Apr 2019
	• Koh Young Technology	Jan 2019

AWARDS	• Best Academic Award, DGIST	Sep 2021
	• 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	• NeurIPS 2020 Top 10% of high-scoring reviewer	Oct 2020
	• 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
	• International Computer Vision Summer School (ICVSS 2016), Sicily, Italy	July 2016
	• Summa Cum Laude, Sogang University	Feb 2014
	• Academic Excellence Scholarship, Sogang University	Seb 2012 – Feb 2013
	• Scholarship, Korea Scholarship Foundation	Feb 2012 – Feb 2014

IT SKILLS	• Languages: Python, MATLAB, C, C++, LaTeX
	• Deep Learning Framework: Pytorch, Torch, Tensorflow

Last Update: 2021/09/23