

# Sanghyun Son

## Contact Information

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Google scholar: [link](#)

## Education

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Integrated **Ph.D.** program in Department of ECE Mar. 2017 – Present  
Seoul National University (SNU), Seoul, Korea  
Advisor: Kyoung Mu Lee

**B.S.** in Department of ECE - *summa cum laude* Mar. 2013 – Feb. 2017  
Seoul National University (SNU), Seoul, Korea

## International Publications

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- Wooseok Lee, **Sanghyun Son**, and Kyoung Mu Lee, “AP-BSN: Self-Supervised Denoising for Real-World Images via Asymmetric PD and Blind-Spot Network,” In **CVPR**, 2022.
- Reyhaneh Neshatavar, Mohsen Yavartanoo, **Sanghyun Son**, and Kyoung Mu Lee, “CVF-SID: Cyclic Multi-Variate Function for Self-Supervised Image Denoising by Disentangling Noise from Image,” In **CVPR**, 2022.
- Seungjun Nah, **Sanghyun Son**, Jaerin Lee, and Kyoung Mu Lee, “Clean Images are Hard to Reblur: Exploiting the Ill-Posed Inverse Task for Dynamic Scene Deblurring,” In **ICLR**, 2022.
- Geonwoon Jang, Wooseok Lee, **Sanghyun Son**, and Kyoung Mu Lee, “C2N: Practical Generative Noise Modeling for Real-World Denoising,” In **ICCV**, 2021.
- **Sanghyun Son** and Kyoung Mu Lee, “SRWarp: Generalized Image Super-Resolution under Arbitrary Transformation,” In **CVPR**, 2021.
- **Sanghyun Son**<sup>\*</sup>, Jaeha Kim<sup>\*</sup>, Wei-Sheng Lai, Ming-Hsuan Yang, and Kyoung Mu Lee, “Toward Real-World Super-Resolution via Adaptive Downsampling Models,” *IEEE Trans. on Pattern Analysis and Machine Intelligence (TPAMI)*, vol. 44, no. 11, pp. 8567-8670, 2022.  
<https://doi.org/10.1109/TPAMI.2021.3106790>
- **Sanghyun Son** and Kyoung Mu Lee, “Image Super-Resolution,” in Ikeuchi K. (eds) *Computer Vision*. Springer, Cham, 2021. [https://doi.org/10.1007/978-3-030-03243-2\\_838-1](https://doi.org/10.1007/978-3-030-03243-2_838-1)
- Seungjun Nah, **Sanghyun Son**, and Kyoung Mu Lee, “Recurrent Neural Networks with Intra-Frame Iterations for Video Deblurring,” In **CVPR**, 2019.
- **Sanghyun Son**, Seungjun Nah, and Kyoung Mu Lee, “Clustering Convolutional Kernels to Compress Deep Neural Networks,” In **ECCV**, 2018.

- Bee Lim, **Sanghyun Son**, Heewon Kim, Seungjun Nah, and Kyoung Mu Lee, “Enhanced Deep Residual Networks for Single Image Super-Resolution,” **NTIRE 2017** workshop in conjunction with **CVPR**, 2017. (Challenge Winners, Workshop Best Paper)

## International Challenges: Reports and Dataset

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- **Sanghyun Son**, Suyoung Lee, Seungjun Nah, Radu Timofte, and Kyoung Mu Lee, “NTIRE 2021 Challenge on Video Super-Resolution,” **NTIRE 2021** workshop in conjunction with **CVPR**, 2021.
- Seungjun Nah, **Sanghyun Son**, Suyoung Lee, Radu Timofte, and Kyoung Mu Lee, “NTIRE 2021 Challenge on Image Deblurring,” **NTIRE 2021** workshop in conjunction with **CVPR**, 2021.
- **Sanghyun Son**, Jaerin Lee, Seungjun Nah, Radu Timofte, and Kyoung Mu Lee, “AIM 2020 Challenge on Video Temporal Super-Resolution,” **AIM 2020** workshop in conjunction with **ICCV**, 2020.
- Seungjun Nah, **Sanghyun Son**, Radu Timofte, and Kyoung Mu Lee, “NTIRE 2020 Challenge on Image and Video Deblurring,” **NTIRE 2020** workshop in conjunction with **CVPR**, 2020.
- Seungjun Nah, **Sanghyun Son**, Radu Timofte, and Kyoung Mu Lee, “AIM 2019 Challenge on Video Temporal Super-Resolution: Methods and Results,” **AIM 2019** workshop in conjunction with **ICCV**, 2019.
- Seungjun Nah, Sungyong Baik, Seokil Hong, Gyeongsik Moon, **Sanghyun Son**, Radu Timofte, and Kyoung Mu Lee, “NTIRE 2019 Challenge on Video Deblurring and Super-Resolution: Dataset and Study,” **NTIRE 2019** workshop in conjunction with **CVPR**, 2019.

## Service

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### Workshop Challenge Co-organizer

NTIRE 2021 Challenge on Video Super-Resolution, Video Deblurring <a href="#">NTIRE 2021 workshop</a> in conjunction with CVPR, 2021	Jun. 2021
AIM 2020 Challenge on Video Temporal Super-Resolution <a href="#">AIM 2020 workshop</a> in conjunction with ECCV, 2020	Aug. 2020
AIM 2019 Challenge on Video Temporal Super-Resolution <a href="#">AIM 2019 workshop</a> in conjunction with ICCV, 2019	Sep. 2019

### Conference Reviewer

CVPR, ECCV, ICCV, and the corresponding Workshops

### Journal Reviewer

IEEE TPAMI, TIP, TCI  
Springer IJCV  
Elsevier CVIU

## Internship

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Student Research Intern Jan. 2019 - Jun. 2019  
 Research Topic: Single Image Super-Resolution for Real-World Images  
 Google Cloud, Sunnyvale, CA, USA  
 Mentor: Ming-Hsuan Yang

## Teaching Assistant

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EE729.003: Advanced Trends in Computer Vision (ATCV) Seoul National University, Seoul, Korea	Sep. 2020 – Dec. 2020
Neural Processing Expert (NPEX): Image Restoration Lab. Samsung Electronics SNU Cooperation R&D Center, Seoul, Korea	Sep. 2020
EE729.001: Topics in Control and Automation Seoul National University, Seoul, Korea	Sep. 2019 – Dec. 2019
Neural Processing Expert (NPEX): Image Restoration Lab. Samsung Electronics SNU Cooperation R&D Center, Seoul, Korea	Jul. 2019
EE306: Signal and Systems Seoul National University, Seoul, Korea	Mar. 2017 – Jun. 2017

## Research Projects

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Ongoing project (Private) Hanwha Techwin	Dec. 2021 – Present
Efficient Vision Transformer for Image Super-Resolution Naver	May 2021 – May 2022
Raw Food Image Generation by Domain Adaptation Samsung Research	Dec. 2020 – Dec. 2021

## Awards and Honors

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- **The KCCV Sang-Uk Lee Prize** (Test of Time award) from KCCV 2022.
- **Winner** of Qualcomm Innovation Fellowship Korea 2021.
- **Highly Cited Paper Award** from Department of ECE, SNU, 2018.
- **1st Place Award** in NTIRE 2017 Challenge on Single Image Super-Resolution.
- **Best Paper Award** of NTIRE 2017 Workshop: Challenge Track.

## Scholarships

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• <b>Youlchon AI Stars Scholarship</b> , Youlchon Foundation	2022
• <b>Kwanjeong Scholarship</b> , Kwanjeong Educational Foundation	2017 – 2018
• <b>National Scholarship for Science &amp; Engineering</b> , Korea Student Aid Foundation	2015 – 2016
• <b>Scholarship of Academic Excellence</b> , Seoul National University	2013 – 2014

## Skills

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PyTorch, Python, C++, MATLAB, CUDA, L<sup>A</sup>T<sub>E</sub>X

## Research Interests

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I am interested in deep learning and low-level image restoration problems, especially image super-resolution, denoising, and deblurring. Recently I mainly working on reconstructing high-resolution images from real-world inputs. My research topics also include network optimization and acceleration to handle practical issues in deep learning.

## References

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Advisor   Kyoung Mu Lee  
          Professor  
          Seoul National University  
          kyoungmu(at)snu.ac.kr  
          <https://cv.snu.ac.kr/index.php/kmlee>

Mentor    Ming-Hsuan Yang  
          Professor  
          UC Merced  
          mhyang(at)ucmerced.edu  
          <http://faculty.ucmerced.edu/mhyang>