Sanghyun Son

Contact Information

Affiliation:	Department of ECE, ASRI, Seoul National University (SNU), Seoul, Korea
Address:	1 Gwanak-ro 133-508, Gwanak-gu, Seoul, Korea, 08826
Email:	sonsang35(at)gmail.com, thstkdgus35(at)snu.ac.kr
Github:	https://github.com/sanghyun-son
Homepage:	https://sanghyun-son.github.io
Google scholar:	link

Education

Ph.D. in Department of ECE   Mar. 2017 – Aug. 2023
Integrated Ph.D. program in Seoul National University (SNU), Seoul, Korea
Thesis: Generalized Resampling Model for Practical Image Super-Resolution
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

• Joonkyu Park, **Sanghyun Son**, and Kyoung Mu Lee, "Content-Aware Local GAN for Photo-Realistic Super-Resolution," In **ICCV**, 2023.

• 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**[*], Jaeha Kim[*], 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

• 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, Over 5,000 citations on Google Scholar, over 2,100 Github Stars**)

International Challenges and Reports

• **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.

Academic Experience & Service

Workshop Challenge Co-organizer

NTIRE 2021 Challenge on Video Super-Resolution, Video Deblurring   Jun. 2021
NTIRE 2021 workshop in conjunction with CVPR, 2021

AIM 2020 Challenge on Video Temporal Super-Resolution   Aug. 2020
AIM 2020 workshop in conjunction with ECCV, 2020

AIM 2019 Challenge on Video Temporal Super-Resolution   Sep. 2019
AIM 2019 workshop in conjunction with ICCV, 2019

Conference Reviewer

CVPR, ECCV, ICCV, and the corresponding Workshops on image restoration

Journal Reviewer

IEEE TPAMI, TIP, TCI
Springer IJCV
Elsevier CVIU

Internship

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

Teaching Assistant

EE729.003: Advanced Trends in Computer Vision (ATCV)   Sep. 2020 – Dec. 2020
Seoul National University, Seoul, Korea

Neural Processing Expert (NPEX): Image Restoration Lab.   Sep. 2020
Samsung Electronics SNU Cooperation R&D Center, Seoul, Korea

EE729.001: Topics in Control and Automation   Sep. 2019 – Dec. 2019
Seoul National University, Seoul, Korea

Neural Processing Expert (NPEX): Image Restoration Lab.   Jul. 2019
Samsung Electronics SNU Cooperation R&D Center, Seoul, Korea

EE306: Signal and Systems   Mar. 2017 – Jun. 2017
Seoul National University, Seoul, Korea

Research Projects

MLPerf Mobile AI Benchmark: Super-Resolution Track   April 2022 – Present
in conjunction with MLCommons
  Invited talk: Mobile Super-Resolution: MLPerf App - Benchmarking and Challenges
  Efficient Deep Learning Workshop for Conputer Vision, in conjunction with **CVPR**, 2023.

Pixel-wise Adaptive Weighting for Perceptual Image Super-Resolution   May 2022 – May 2023
Naver

Efficient Vision Transformer for Image Super-Resolution   May 2021 – May 2022
Naver

Raw Food Image Generation by Domain Adaptation   Dec. 2020 – Dec. 2021
Samsung Research

Awards and Honors

- **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

- **Youlchon AI Stars Scholarship**, Youlchon Foundation   2022
- **Kwanjeong Scholarship**, Kwanjeong Educational Foundation   2017 – 2018
- **National Scholarship for Science & Engineering**, Korea Student Aid Foundation   2015 – 2016
- **Scholarship of Academic Excellence**, Seoul National University   2013 – 2014

Skills

PyTorch, Python, C++, MATLAB, CUDA, LaTeX

Research Interests

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

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, Google
	mhyang(at)ucmerced.edu
	http://faculty.ucmerced.edu/mhyang