

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](#)

Work Experience

Staff Engineer at Computer Vision TU Sep. 2023 – Present
AI Research Center, SAIT, Samsung Electronics
Developing AI-based ISP solution

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

- Reyhaneh Neshatavar*, Mohsen Yavartanoo*, **Sanghyun Son**, and Kyoung Mu Lee, “ICF-SRSR: Invertible scale-Conditional Function for Self-Supervised Real-world Single Image Super-Resolution,” In **WACV**, 2024.
- 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 2,300 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
[NTIRE 2021 workshop](#) in conjunction with CVPR, 2021 Jun. 2021
- AIM 2020 Challenge on Video Temporal Super-Resolution
[AIM 2020 workshop](#) in conjunction with ECCV, 2020 Aug. 2020
- AIM 2019 Challenge on Video Temporal Super-Resolution
[AIM 2019 workshop](#) in conjunction with ICCV, 2019 Sep. 2019

Conference Reviewer

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

Journal Reviewer

IEEE TPAMI, TIP, TCI
Springer IJCV
Elsevier CVIU

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

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

Research Projects

MLPerf Mobile AI Benchmark: Super-Resolution Track in conjunction with MLCommons <i>Invited talk:</i> Mobile Super-Resolution: MLPerf App - Benchmarking and Challenges Efficient Deep Learning Workshop for Computer Vision, in conjunction with CVPR , 2023.	Apr. 2022 – Mar. 2023
Pixel-wise Adaptive Weighting for Perceptual Image Super-Resolution Naver	May 2022 – May 2023
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

- **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, L^AT_EX

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>