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RESEARCH INTERESTS	Image enhancement, computer vision, federated learning, on-device AI, and deep learning	
EDUCATION	Korea University <i>Ph.D in Electrical Engineering</i> Advisor: Sung-Jea Kos	Seoul, Republic of Korea Feb, 2019
	Korea University <i>B.S. in Electrical Engineering</i>	Seoul, Republic of Korea Feb, 2012
PROFESSIONAL EXPERIENCE	Assistant Professor at <i>Pukyong National University</i>	Mar 2022 - Present
	Staff Researcher at <i>Samsung Advanced Institute of Technology</i>	Jan 2020 - Jan 2022
	Research Professor at <i>Korea University</i>	Mar 2019 - Dec 2019
TECHNICAL SKILLS	Languages : Python, C/C++, MATLAB Frameworks : PyTorch, Caffe	
RESEARCH PROJECTS	Neural Architecture and Database Search	Jun 2022 - Present
	Network architecture and dataset search for real-time video object detection and tracking, <i>National Research Foundation of Korea (NRF)</i>	
	Deep Image Processing	Feb 2020 - Jan 2022
	Research in deep image processing and computer vision algorithms for Samsung's inherent image sensors.	
	Deep-View	Mar 2015 - Dec 2019
	Development of global multi-target tracking and event prediction techniques based on real-time large-scale video analysis, <i>Institute for Information & communications Technology Promotion (IITP)</i>	
	CNN-based Instance Segmentation	Mar - Jul 2017
	Development of high speed DNN based video segmentation technology, <i>LG Electronics Co., Ltd.</i>	
	Monitor Color Calibration	May 2014 - Apr 2015
	Development of compensation algorithm for multiple monitors and re-coloring technique using a smart phone camera, <i>LG Electronics Co., Ltd.</i>	
	Image Quality Assessment and Logo Detection	Jul 2014 - Jan 2015
	Research on image quality assessment and feature extraction from commercial multimedia, <i>Electronics and Telecommunications Research Institute (ETRI)</i>	

Color Adjustment**Jul 2014 - Jan 2015**Development of image compensation method for interactive broadcasting, *Electronics and Telecommunications Research Institute (ETRI)***Face Recognition for Smart Glasses****Jan 2012 - Feb 2015**Open platform development of see-through smart glasses with smart vision, *National IT Industry Promotion Agency (NIPA)***Moving Object Detection****Jan 2012 - May 2012**Development of pedestrian detection and moving pattern analysis module for intelligent visual surveillance, *NEXPA***JOURNAL
PUBLICATIONS**

1. C.-H. Sung, S.-Y. Kim, H.-J. Shin, S.-H. Lee, and **S.-W. Kim***, "Enhanced blur-robust monocular depth estimation via self-supervised learning," *Electronics Letters*, vol. 60, no. 22, 2024. [**IF: 0.7, ISSN: 0013-5194**] (*corresponding author)
2. S.-H. Lee and **S.-W. Kim***, "DCPNet: Deformable Control Point Network for Image Enhancement," *Journal of Visual Communication and Image Representation*, vol. 104, 2024. [**IF: 2.6, ISSN: 1047-3203**] (*corresponding author)
3. H. Lee and **S.-W. Kim***, "Task-oriented edge networks: decentralized learning over wireless fronthaul," *IEEE IoT Journal*, 2024. [**IF: 8.2 (3.4%), ISSN: 2327-4662**] (*corresponding author)
4. S.-H. Lee and **S.-W. Kim***, "Dual-branch vision transformer for blind image quality assessment," to appear in *Journal of Visual Communication and Image Representation*, 2023. [**IF: 2.6, ISSN: 1047-3203**] (*corresponding author)
5. S.-J. Cho, **S.-W. Kim***, S.-W. Jung, and K.-S. Ko, "Blur-robust object detection using feature-level deblurring via self-guided knowledge distillation," *IEEE Access*, vol. 10, pp. 79491-79501, July 29, 2022. [**IF: 3.4, ISSN: 2169-3536**] (*corresponding author)
6. S.-J. Cho, J. R. Chung, **S.-W. Kim**, S.-W. Jung, and K.-S. Ko, "Compression artifacts reduction using fusion of multiple restoration networks," *IEEE Access*, vol. 9, pp. 66176-66187, Apr. 30, 2021. [**IF: 3.4, ISSN: 2169-3536**]
7. **S.-W. Kim**, K.-S. Ko, H.-E. Ko, and V. Leung, "Edge network-assisted real-time object detection framework for autonomous driving," *IEEE Network*, vol. 35, no. 1, pp. 177-183, Feb. 16, 2021. [**IF: 6.8 (9.3%), ISSN: 0890-8044**]
8. F. Ming*, **S.-W. Kim***, S.-T. Kim, J.-Y. Sun, and S.-J. Ko "Simple but effective scale estimation for monocular visual odometry in road driving scenarios," *IEEE Access*, vol. 8, pp. 175891-175903, Sept. 24, 2020. (*Equally contributed) [**IF: 3.4, ISSN: 2169-3536**]
9. S.-W. Ji, **S.-W. Kim**, D.-P. Lim, S.-W. Jung, and S.-J. Ko, "Quaternary census transform based on the human visual system for stereo matching," *IEEE Access*, vol. 8, pp. 116501-116514, June 22, 2020. [**IF: 3.4, ISSN: 2169-3536**]
10. C.-H. Yoo, S.-W. Ji, Y.-G. Shin, **S.-W. Kim**, and S.-J. Ko, "Fast and accurate 3d hand pose estimation via recurrent neural network for capturing hand articulations," *IEEE Access*, vol. 8, pp. 114010-114019, June 11, 2020. [**IF: 3.4, ISSN: 2169-3536**]
11. Y.-J. Yeo, Y.-G. Shin, M.-C. Sagong, **S.-W. Kim**, and S.-J. Ko, "Simple yet effective way for improving the performance of lossy image compression," *IEEE Signal Processing Letters*, vol. 27, pp. 530-534, Mar. 23, 2020. [**IF: 3.2, ISSN: 1070-9908**]
12. Y.-G. Shin, M.-C. Sagong, Y.-J. Yeo, **S.-W. Kim**, and S.-J. Ko, "Pepsi++: Fast and lightweight network for image inpainting," *IEEE Transactions on Neural*

Networks and Learning Systems, vol. 32, no. 1, Jan., 2020.
[IF: 10.2 (3.0%), ISSN: 2162-237X]

13. M. Fan, D.-H. Lee, **S.-W. Kim**, and S.-J. Ko, "An optimization framework for inverse tone mapping using a single low dynamic range image," *Signal Processing: Image Communication*, vol. 78, pp. 274-283, Oct. 16, 2019.
[IF: 3.4, ISSN: 0923-5965]
14. C.-H. Yoo, Y.-G. Shin, **S.-W. Kim**, and S.-J. Ko, "Context-aware encoding for clothing parsing," *Electronics Letters*, vol. 55, no. 12, pp. 692-693, June 1, 2019.
[IF: 0.7, ISSN: 1350-911X]
15. B.-S. Kim, J.-Y. Sun, **S.-W. Kim**, M.-C. Kang, and S.-J. Ko, "CNN-based UGS method using Cartesian-to-polar coordinate transformation," *Electronics Letters*, vol. 54, no. 23, pp.1321-1322, Nov. 15, 2018. [IF: 0.7, ISSN: 1350-911X]
16. D.-H. Lee, M. Fan, **S.-W. Kim**, M.-C. Kang, and S.-J. Ko, "High dynamic range image tone mapping based on asymmetric model of retinal adaptation," *Signal Processing: Image Communication*, vol. 68, pp. 120-128, Oct. 16, 2018.
[IF: 3.4, ISSN: 0923-5965]
17. J.-Y. Sun, **S.-W. Kim**, S.-W. Lee, and S.-J. Ko, "A novel contrast enhancement forensics based on convolutional neural networks," *Signal Processing: Image Communication*, vol. 63, pp. 149-160, Apr. 1, 2018.
[IF: 3.4, ISSN: 0923-5965]
18. B.-S. Kim, K.-A. Chohi, W.-J. Park, **S.-W. Kim**, and S.-J. Ko, "Content-preserving video stitching method for multi-camera systems," *IEEE Transactions on Consumer Electronics*, vol. 63, no. 2, May 2017.
[IF: 4.3, ISSN: 1558-4127]
19. C.-H. Yoo, **S.-W. Kim**, J.-Y. Jung, and S.-J. Ko, "High-dimensional feature extraction using bit-plane decomposition of local binary patterns for robust face recognition," *Journal of Visual Communication and Image Representation*, vol. 45, pp. 11-19, May 1, 2017. [IF: 2.6, ISSN: 1047-3203]
20. Y.-H. Kim, H. Kim, **S.-W. Kim**, H.-Y. Kim, and S.-J. Ko, "Illumination normalisation using convolutional neural network with application to face recognition," *Electronics Letters*, vol. 53, no. 6, pp. 399-401, Mar. 1, 2017.
[IF: 0.7, ISSN: 1350-911X]
21. J.-Y. Jung, **S.-W. Kim**, S. Park, B.-D. Choi, and S.-J. Ko, "Camera-based color calibration method for multiple flat-panel displays using smartphone," *Journal of Display Technology*, vol. 12, no. 12, pp. 1777-1784, Dec. 2016.
[IF: 1.5, ISSN: 1558-9323]
22. J.-Y. Sun, **S.-W. Kim**, S.-H. Lee, J.-E. Choi, and S.-J. Ko, "Automatic facial pore analysis system using multi-scale pore detection," *Skin Research and Technology*, vol. 23, no. 3, pp. 354-362, Nov. 1, 2017.
[IF: 2.0, ISSN: 1600-0846]
23. J.-Y. Jung, **S.-W. Kim**, C.-H. Yoo, W.-J. Park, and S.-J. Ko, "LBP-ferns-based feature extraction for robust facial recognition," *IEEE Transactions on Consumer Electronics*, vol. 62, no. 4, pp. 446-453, Nov. 2016.
[IF: 4.3, ISSN: 1558-4127]
24. **S.-W. Kim**, J.-Y. Jung, C.-H. Yoo, and S.-J. Ko, "Retinex-based illumination normalization using class-based illumination subspace for robust face recognition," *Signal Processing*, vol. 120, pp. 348-358, Mar. 2016.
[IF: 3.4, ISSN: 0165-1684]
25. **S.-W. Kim**, B.-D. Choi, W.-J. Park, and S.-J. Ko, "2D histogram equalisation based on the human visual system," *Electronics Letters*, vol. 52, no. 6, pp. 443-445, Mar. 17, 2016. [IF: 0.7, ISSN: 1350-911X]

26. C. Ma, J.-Y. Jung, **S.-W. Kim**, and S.-J. Ko, "Random projection-based partial feature extraction for robust face recognition," *Neurocomputing*, vol. 149, Part C, pp. 1232-1244, Feb. 3, 2015. [**IF: 5.5, ISSN: 0925-2312**]
27. L. Lei, **S.-W. Kim**, W.-J. Park, D.-H. Kim, and S.-J. Ko, "Eigen directional bit-planes for robust face recognition," *IEEE Transactions on Consumer Electronics*, vol. 60, no. 4, pp. 702-709, Nov. 2014. [**IF: 4.3, ISSN: 1558-4127**]

WORKSHOP PUBLICATIONS

1. K.-H. Uhm, **S.-W. Kim**, S.-W. Ji, S.-J. Cho, J.-P. Hong, and S.-J. Ko, "W-net: Two-stage U-net with misaligned data for raw-to-rgb mapping," *ICCVW 2019*, Seoul, Korea. [**H5-index: 80**]
2. Ignatov *et al.*, "AIM 2019 challenge on Raw to RGB mapping: Methods and results," *ICCVW 2019*, Seoul, Korea. [**H5-index: 80**]
3. J.-Y. Sun, **S.-W. Kim**, S.-W. Lee, Y.-W. Kim, and S.-J. Ko, "Reverse and boundary attention network for road segmentation," *ICCVW 2019*, Seoul, Korea. [**Citations: 65**]
4. **S.-W. Kim**, S.-J. Cho, K.-H. Uhm, S.-W. Ji, S.-W. Lee, and S.-J. Ko, "Evaluating Parameterization Methods for Convolutional Neural Network (CNN)-Based Image Operators," *CVPRW 2019*, Long Beach, USA. [**H5-index: 115**]
5. Abdelhamed *et al.*, "NTIRE 2019 challenge on real image denoising: Methods and results," *CVPRW 2019*, Long Beach, USA. [**H5-index: 115**]

CONFERENCE PUBLICATIONS

1. Hoon Lee and **S.-W. Kim***, "Decentralized and versatile edge encoding methods for task-oriented communication systems," *ICOIN 2024*, Ho Chi Minh, Vietnam. (*corresponding author)
2. S.-W. Ji*, J.-M. Lee*, **S.-W. Kim***, J.-P. Hong, S.-J. Baek, S.-W. Jung, and S.-J. Ko, "XYDeblur: Divide and Conquer for Single Image Deblurring," to appear in *CVPR 2022*, New Orleans, USA. (*Equally contributed) [**Citations: 47, H5-index: 440**]
3. S.-J. Cho, K.-H. Uhm, **S.-W. Kim**, S.-W. Ji, and S.-J. Ko, "Parallel feature pyramid network for image denoising," *IEEE International Conference on Consumer Electronics (ICCE) 2020*, Las Vegas, USA.
4. M.-C. Sagong, Y.-G. Shin, **S.-W. Kim**, S. Park, and S.-J. Ko, "PEPSI: Fast Image Inpainting with Parallel Decoding Network," *CVPR 2019*, Long Beach, USA. [**Citations: 163, H5-index: 440**]
5. S.-J. Cho, **S.-W. Kim**, K.-H. Uhm, H.-K. Kook, and S.-J. Ko, "Learning an object detector using zoomed object regions," *ICEIC 2019*, Auckland, New Zealand, 2019.
6. **S.-W. Kim**, H.-K. Kook, J.-Y. Sun, M.-C. Kang, and S.-J. Ko, "Parallel feature pyramid network for object detection," *ECCV 2018*, Munich, Germany, 2018. [**Citations: 340, H5-index: 206**]
7. S.-J. Cho, **S.-W. Kim**, J.-Y. Sun, K.-H. Uhm, and S.-J. Ko, "Bi-Directional feature pyramid network for object detection," *ITC-CSCC 2018*, Bangkok, Thailand, 2018.
8. J.-Y. Sun, S.-W. Lee, M.-C. Kang, **S.-W. Kim**, and S.-J. Ko, "A novel gastric ulcer differentiation system using convolutional neural networks," *IEEE 31st International Symposium on Computer-Based Medical Systems (CBMS)*, Karlstad, Sweden, 2018. [**H5-index: 38**]
9. H.-K. Kook, **S.-W. Kim**, S.-W. Lee, Y.-H. Kim, and S.-J. Ko, "Object detection with multi-scale context aggregation," *ICEIC 2018*, Hawaii, USA, 2018.
10. **S.-W. Kim**, H.-K. Kook, Y.-H. Kim, J.-Y. Sun, and S.-J. Ko, "Single shot object detection using spatial pyramid pooling," *ICEIC 2018*, Hawaii, USA, 2018.

11. J.-Y. Kim, **S.-W. Kim**, H.-Y. Kim, W.-J. Park, and S.-J. Ko, "Improved pedestrian detection using joint aggregated channel features," *ICEIC 2016*, Da Nang, Vietnam, 2016.
12. M. Fan, J.-W. Yun, K.-Y. Byun, **S.-W. Kim**, and S.-J. Ko, "Automatic color calibration method for multiple display system using smart phone," *ICGHIT 2015*, Da Nang, Vietnam, 2015.
13. **S.-W. Kim**, J.-Y. Jung, S. Park, and S.-J. Ko, "Enhanced illumination normalization for LBP-based face recognition," *ICEIC 2014*, Kota Kinabalu, Malaysia, 2014.
14. **S.-W. Kim**, J.-Y. Jung, S.-J. Lee, A. W. Morales, and S.-J. Ko, "Sensor fusion-based people counting system using the active appearance models," *ICCE 2013*, Las Vegas, USA, 2013.

DOMESTIC PUBLICATIONS

Conference: 7 papers (in Korean)

PATENTS

3 USA patents
2 domestic patents

INVITED TALKS

"Advancements in AI for Mobile Consumer Electronics: A Comprehensive Review," Tutorial Session in *ICCE-Asia*, Oct 2023.
"Feature Pyramid Networks for Object Detection," *Kakao Corp.*, Nov 2018.
"Introduction to Transformers," *Korea University*, Dec 2021.

PROFESSIONAL SERVICE

Reviewer for Journals

- IEEE Transactions on Neural Networks and Learning Systems
- IEEE Transactions on Image Processing
- IEEE Transactions on Multimedia
- IEEE Access
- Neurocomputing
- Scientific Report
- Journal of Communications and Networks
- IEIE Transactions on Smart Processing and Computing

AWARDS AND HONORS

Winner in RAW to RGB Mapping Challenge at ICCV 2019	Oct 2019
Advances in image manipulation raw to RGB mapping challenge Fidelity	
3rd place in NAVER AI Rush	Aug 2019
Image classification and click-through rate prediction	
Winner in NAVER AI Hackathon	Jan 2019
Image retrieval challenge on general product images	