Seung-Wook Kim

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RESEARCH INTERESTS
Image restoration, image color enhancement, illumination/color normalization, deep learning, computer vision, and object detection/recognition

EDUCATION

Korea University — Seoul, Republic of Korea
Ph.D in Electrical Engineering — Feb, 2019
Advisor: Sung-Jea Ko
GPA: 4.19/4.50

Korea University — Seoul, Republic of Korea
B.S. in Electrical Engineering — Feb, 2012

PROFESSIONAL EXPERIENCE

Staff Researcher at *Samsung Advanced Institute of Technology* — **Jan 2020 - Present**

Research Professor at *Korea University* — **Mar 2019 - Dec 2019**

TECHNICAL SKILLS

Languages : Python, C/C++, MATLAB
Frameworks : PyTorch, Caffe

JOURNAL PUBLICATIONS

1. 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," to appear in *IEEE Access*, 2021. [**IF: 3.745, ISSN: 2169-3536**]

2. **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: 8.808, ISSN: 0890-8044**]

3. F. Ming*, **S.-W. Kim***, S.-T. Kim, J.-Y. Sun, 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: 3.745, ISSN: 2169-3536**]

4. 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: 3.745, ISSN: 2169-3536**]

5. 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: 3.745, ISSN: 2169-3536**]

6. 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: 3.105, ISSN: 1070-9908**]

7. 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: 8.793, ISSN: 2162-237X**]

8. 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: 2.779, ISSN: 0923-5965]

9. 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: 1.316, ISSN: 1350-911X]

10. 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: 1.316, ISSN: 1350-911X]**

11. 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: 2.779, ISSN: 0923-5965]

12. 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: 2.779, ISSN: 0923-5965]

13. 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: 2.739, ISSN: 1558-4127]

14. 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: 2.479, ISSN: 1047-3203]**

15. 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: 1.316, ISSN: 1350-911X]

16. 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: 1.530, ISSN: 1558-9323]

17. 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: 2.079, ISSN: 1600-0846]

18. 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: 2.739, ISSN: 1558-4127]

19. **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: 4.384, ISSN: 0165-1684]

20. **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: 1.316, ISSN: 1350-911X]**

21. 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: 4.438, ISSN: 0925-2312]**

22. 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: 2.739, 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: 51**]

2. Ignatov *et al.*, "AIM 2019 challenge on Raw to RGB mapping: Methods and results," *ICCVW 2019*, Seoul, Korea. [**H5-index: 51**]

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. [**H5-index: 51**]

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: 73**]

5. Abdelhamed *et al.*, "NTIRE 2019 challenge on real image denoising: Methods and results," *CVPRW 2019*, Long Beach, USA. [**H5-index: 73**]

CONFERENCE PUBLICATIONS

1. 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. [**H5-index: 21**]

2. 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. [**H5-index: 299**]

3. 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.

4. **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. [**H5-index: 144**]

5. 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.

6. 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: 17**]

7. 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.

8. **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.

9. 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.

10. 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.

11. **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.

12. **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. [**H5-index: 21**]

DOMESTIC PUBLICATIONS	Conference: 4 papers (in Korean)
DOMESTIC PATENTS	2 domestic patents
INVITED TALKS	"Feature Pyramid Networks for Object Detection," *Kakao Corp.*, Nov 2018.

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
- 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: Track 1 Fidelity

2nd place in RAW to RGB Mapping Challenge at ICCV 2019　　Oct 2019
Advances in image manipulation raw to RGB mapping challenge: Track 1 Perceptual

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