

YOUNGRAE KIM

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EDUCATION

University of Southern California (USC)

Los Angeles, CA, USA

Ph.D. in Computer Engineering

From Aug. 2024

- Advisor: Prof. C.-C. Jay Kuo

Korea Advanced Institute of Science and Technology (KAIST)

Daejeon, Korea

M.S. in Computer Science

Feb. 2022 – Feb. 2024

- GPA: 3.66/4.3 (3.62/4.0), Advisor: Prof. Dongman Lee
- Thesis: "Few-Shot Weather-Degraded Image Restoration"
- Full-tuition Government Scholarship for Science and Engineering

Hongik University

Seoul, Korea

B.S. in Computer Engineering

Mar. 2016 – Feb. 2022

- CGPA: 4.01/4.5 (3.74/4.0), Major GPA: 4.2/4.5 (3.86/4.0)
- Academic Excellence Scholarship for 7 semesters

RESEARCH INTERESTS

Domain Adaptation, Few-shot Learning, Image/Video Understanding

PREPRINTS

Kim, Y.R.*, Cho, Y.G.*, Lee, D.M. "Beyond Entropy: Style Transfer Guided Single Image Continual Test-Time Adaptation." *Under review*. [\[Link\]](#)

(* denotes equal contributions)

PUBLICATIONS

Kim, Y.R.*, Cho, Y.G.*, Nguyen, T.T., Lee, D.M. "MetaWeather: Few-Shot Weather-Degraded Image Restoration." *European Conference on Computer Vision ECCV 2024*. [\[Link\]](#)

Kim, Y.R.*, Ahn G.O.*, Bae, K.H.*, et al. "DEVIAS: Learning Disentangled Video Representations of Action and Scene." *European Conference on Computer Vision ECCV 2024*. [\[Link\]](#)

Kim, Y.R.*, Cho, H.H.*, Lim, J.S.*, Lee, M.J.*, et al. "Efficient Reference-based Video Super-Resolution (ERVSR): Single Reference Image is All You Need." *IEEE/CVF Winter Conference on Applications of Computer Vision WACV 2023*. [\[Link\]](#)

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RESEARCH EXPERIENCE

KAIST CDSN Lab (Advisor: Prof. Dongman Lee)

Daejeon, Korea

Test-Time Adaptation with Style Transfer

Aug. 2023 – Present

- Formulated the test-time adaptation problem as a style transfer problem with novel losses.
- Stabilized the adaptation process even with a single image, interpolating the statistics of the target domain.

Few-Shot Learning on Weather-Degraded Image Restoration

Feb. 2023 – Mar. 2024

- Suggested prioritization of learning degradation patterns over background distribution by image restoration models without sufficient labeled data, assuming that degradation patterns are only the common factor among the limited few-shot images available for adaptation.
- Applied a matching network paradigm to the model to build generalized knowledge using episodic meta-learning.

Kyung Hee University VLL Lab (Prof. Jinwoo Choi's group)

Suwon, Korea

Disentangled Video Representation Learning.

May 2023 – Nov. 2023

- Examined standard video modes' limitations and clarified they often prioritize the foreground while neglecting the background in videos, which leads to information loss.
- Proposed a novel auxiliary task that significantly improves performance.
- Showed the disentangled and effective representations in our experiments.

KAIST CS570 AI & ML Course (Advisor: Prof. Tae-kyun Kim)

Daejeon, Korea

Efficient Video Super-Resolution

Apr. 2022 – Aug. 2022

- Identified the issue of low computational efficiency in existing reference-based video super-resolution task.
- Determined the suitability/sufficiency of a single frame as a reference feature instead of all frames.
- Extracted the full features of one reference frame and transferred the feature to all frames.
- Greatly improved computational efficiency with minimal performance impact; published results on **WACV 2023**.

Hongik University APL Lab (Advisor: Prof. Young Yoon)

Seoul, Korea

Taxi Dispatch System for Maximizing Profits

Jul. 2020 – Dec. 2021

- Processed raw sensor data; implemented and conducted experiments using realistic simulations to evaluate the effectiveness of various dispatching strategies.

ACADEMIC SERVICE

Reviewer, IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)

Reviewer, IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)

TEACHING ASSISTANTSHIPS

Korea Advanced Institute of Science and Technology (KAIST)

Daejeon, Korea

"CS206 Data Structure", School of Computing – *Best TA Award*

Fall 2022

"CS330 Operating System", School of Computing

Spring 2022

PROFICIENCY IN SKILLS

Programming: Python, C/C++, JAVA, Verilog

Frameworks: PyTorch, Docker, Triton Inference Server, gRPC

MILITARY EXPERIENCE

Honorable Discharge as a Sergeant, Republic of Korea Air Force, Cheongju, Korea

Apr. 2018 – Mar. 2020

REFERENCES

Dongman Lee, *Professor*, KAIST School of Computing, Vice President of KAIST (dlee@kaist.ac.kr)

Seunghoon Hong, *Assistant Professor*, KAIST School of Computing, (seunghoon.hong@kaist.ac.kr)

Jinwoo Choi, *Assistant Professor*, Kyung Hee University Science & Engineering (jinwoochoi@khu.ac.kr)