

YOUNGRAE KIM

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EDUCATION

University of Southern California (USC)

Los Angeles, CA, USA

Ph.D. in Computer Engineering

Aug. 2024 – Present

- 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

- 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

- Academic Excellence Scholarship for 7 semesters
- Leave of absence for military service: Mar. 2018 – Feb. 2020 (2 years)

RESEARCH INTERESTS

Image/Video Understanding, Domain Adaptation, Learning with Limited Supervision

PUBLICATIONS

1. Bae, K.H.*, Ahn G.O.*, **Kim, Y.R.***, et al. "DEVIAS: Learning Disentangled Video Representations of Action and Scene." *European Conference on Computer Vision ECCV 2024* (Oral Presentation, **2.3% acceptance rate**). [\[Link\]](#)
2. **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*. [\[Link\]](#)
3. Cho, Y.G.*, **Kim, Y.R.***, Lee, D.M. "Beyond Entropy: Style Transfer Guided Single Image Continual Test-Time Adaptation." *European Conference on Computer Vision ECCV 2024 Workshop on Vision-Centric Autonomous Driving*. [\[Link\]](#)
4. **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* (Oral presentation). [\[Link\]](#)

(* denotes equal contributions)

PREPRINTS

Cho, Y.G.*, **Kim, Y.R.***, Yoon, J.H., Hong, S.H., Lee, D.M. "Feature Augmentation based Test-Time Adaptation." *Under review*. [\[Link\]](#)

(* denotes equal contributions)

RESEARCH EXPERIENCE

KAIST CDSN Lab (Advisor: Prof. Dongman Lee)

Daejeon, Korea

Few-Shot Learning on Weather-Degraded Image Restoration

Feb. 2023 – Mar. 2024

- Firstly proposed the need for few-shot learning in the area of weather-degraded image restoration.
- 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.
- Demonstrated that our performance is comparable to that of many samples; published results on **ECCV 2024**.

Stable Test-Time Adaptation

Aug. 2023 – Mar.2024

- Stabilized the adaptation process even with a single image, interpolating the statistics of the target domain.

Data-Efficient Test-Time Adaptation

Mar. 2024 – Jul.2024

- Fully utilized the limited number of reliable samples efficiently by using the feature augmentation technique.

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

Suwon, Korea

Disentangled Video Representation Learning

May 2023 – Mar. 2024

- Examined typical video modes' limitations and clarified they are often biased to background or neglect the background in videos, which leads to inaccurate prediction or information loss.
- Proposed a novel encoder-decoder framework for disentangling both representations.
- Showed the disentangled and effective representations in our experiments; published results on **ECCV 2024**.

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**.

ACADEMIC SERVICE

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

Reviewer, Association for the Advancement of Artificial Intelligence Conference (AAAI)

Reviewer, IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)

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, (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)