

# YOUNGRAE KIM

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## EDUCATION

### University of Southern California (USC)

Los Angeles, CA, USA

*Ph.D. in Computer Engineering*

Aug. 2024 – Current

- 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

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*.

(\* denotes equal contributions)

## RESEARCH EXPERIENCE

**KAIST CDSN Lab** (Advisor: Prof. Dongman Lee)

Daejeon, Korea

*Test-Time Adaptation*

Aug. 2023 – Jul. 2024

- 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

- 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**.

**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; 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**.

**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**

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

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

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

## **TEACHING ASSISTANTSHIPS**

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**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**

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

**Frameworks:** PyTorch, Docker, Triton Inference Server, gRPC

## **MILITARY EXPERIENCE**

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

Apr. 2018 – Mar. 2020

## **REFERENCES**

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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)