YOUNGRAE KIM

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EDUCATION

Korea Advanced Institute of Science and Technology (KAIST) **Daejeon, Korea**
M.S. in Computer Science Feb. 2022 – Feb.2024 (expected)

- GPA: 3.66/4.3 (3.62/4.0), Advisor: Prof. Dongman Lee
- Thesis: "Few-Shot Weather-Degraded Image Restoration" (under review).
- 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

PUBLICATIONS

Kim, Y.R*., Ahn G.O.*, Bae, K.H.*, et al. "DEVIAS: Learning Disentangled Video Representations of Action and Scene for Holistic Video Understanding." **CVPR 2024.** *Under review.*

Kim, Y.R.*, Cho, Y.G.*, Lee, D.M. "Beyond Entropy: Style Transfer Guided Single Image Continual Test-Time Adaptation." **CVPR 2024.** *Under review.* [Link]

Kim, Y.R.*, Cho, Y.G.*, Nguyen, T.T., Lee, D.M. "MetaWeather: Few-Shot Weather-Degraded Image Restoration via Degradation Pattern Matching." **AAAI 2024.** *Under review.* [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]

(* denotes equal contributions)

RESEARCH EXPERIENCE

KAIST CDSN Lab (Advisor: Prof. Dongman Lee) **Daejeon, Korea**
Test-Time Adaptation with Style Transfer Aug. 2023 – Nov. 2023

- Addressed instability of test-time adaptation methods, especially when using small batch sizes.
- Stabilized the adaptation process even with a single image, interpolating the statistics of the target domain.
- Formulated the test-time adaptation problem as a style transfer problem with novel losses.
- Attained the best performances in both semantic segmentation and image classification; authored and submitted a paper to **CVPR 2024**.

Few-Shot Learning on Weather-Degraded Image Restoration Feb. 2023 – Aug. 2023

- 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.
- Achieved the highest performance in image restoration task; authored and submitted a paper to **AAAI 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; authored and submitted a paper to **CVPR 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

Reviewer, IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR 2024)
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)