YOUNGRAE KIM

Address: Daejeon, South Korea
(+82) 10-8242-3322 | Email: youngrae.kim@kaist.ac.kr | Website: website link

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.*, 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 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)