YOUNGRAE KIM

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EDUCATION

Korea Advanced Institute of Science and Technology (KAIST) Daejeon, South Korea
M.S. in School of Computing Mar. 2022–Anticipated Feb. 2024
Cumulative GPA: 3.66/4.3 (3.62/4.0)
Advisor: Prof. Dongman Lee

Hongik University Seoul, South Korea
B.S. in Computer Engineering Mar. 2016–Feb. 2022
Cumulative GPA: 4.01/4.5 (3.73/4.0) (Ranked top 5%)
Major GPA: 4.2/4.5 (3.85/4.0)
Advisor: Prof. Young Yoon

RESEARCH INTERESTS

My research focuses on improving data efficiency by using techniques for acquiring learning signals from either few-shot labeled data or unlabeled data. Recently, I am interested in developing adaptation techniques without any labeled data in an online manner. I am also interested in enriching the representation of video models.
Keywords: Few-Shot Learning, Domain Adaptation, Scene/Video Understanding

PUBLICATIONS

Language Supportive Test-Time Adaptation on Semantic Segmentation
To be submitted to CVPR 2024

Disentangled Video Representation Learning
To be submitted to CVPR 2024

MetaWeather: Few-Shot Weather-Degraded Image Restoration via Degradation Pattern Matching
Youngrae Kim*, Younggeol Cho*, and Dongman Lee (* denotes equal contribution) [Link]
arXiv, AAAI 2024 Under Review

Efficient Reference-based Video Super-Resolution (ERVSR): Single Reference Image Is All You Need
Youngrae Kim*, Hoonhee Cho*, Jinsu Lim*, Minji Lee*, Ho-Jin Choi, Kuk-Jin Yoon, and Dongman Lee [Link]
2023 IEEE/CVF Winter Conference on Applications of Computer Vision (WACV 2023)

RESEARCH EXPERIENCES

Test-Time Adaptation on Semantic Segmentation, KAIST Aug. 2023–Present
- Proposed to utilize the language model as a learning signal where explicit learning signals do not exist in the test-time adaptation task.
- Polished the learning signal to fit into the semantic segmentation feature space.

Disentangled Video Representation Learning, Kyunghee University May. 2023–Present
- Collaborated with Professor Jinwoo Choi's group at Kyunghee University.
- Provided problem clarification by investigating standard video models' limitations, which often prioritize the foreground while neglecting the background in videos.

Few-Shot Learning on Weather-Degraded Image Restoration, KAIST Feb. 2023–Aug. 2023
- Suggested that in the absence of sufficient labeled data, image restoration models should prioritize learning degradation patterns over background distribution. This proposal was based on the assumption that degradation patterns are only the common factor shared among the limited few-shot images available for adaptation.
- Applied the matching network paradigm to our model to enable it to build generalized knowledge using the episodic

meta-learning method.
- Achieved the highest performance in weather-degraded few-shot image restoration task and wrote a paper for submission to AAAI 2024.

Efficient Video Super-Resolution, KAIST Apr. 2022–Aug. 2022
- Worked with another graduate student in CS570 AI & ML course instructed by Professor Tae-Kyun Kim and discovered a problem in existing reference-based video super-resolution task, which is low computational efficiency.
- Contributed to the ideation that a single frame would suffice as a reference feature instead of all frames.
- Focused on extracting the full features of the one reference frame and transferring the feature to all frames.
- Significantly improved computational efficiency with minimal performance impact. With this achievement, this work was accepted to WACV 2023.

Taxi Dispatch System for Maximizing Profits, Hongik University Jul. 2020–Dec. 2021
- Developed a taxi dispatching strategy to maximize profits.
- Processed raw sensor data and implemented and conducted experiments using realistic simulations to evaluate the effectiveness of various dispatching strategies.

HONORS AND AWARDS

National Scholarship for Science and Engineering Mar. 2022–Present
Tuition and stipend supported by the Korean government
Best TA Award Feb.2023
CS206 Data Structure course, School of Computing, KAIST
Academic Scholarships Mar. 2016–Feb. 2022
Awarded scholarships for every semester, Hongik University

ACADEMIC SERVICES

Reviewer Sept. 2023
IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)

TEACHING EXPERIENCE

Teaching Assistant Fall 2022
Data Structure (CS206) course, School of Computing, KAIST
Teaching Assistant Spring 2022
Operating System (CS330) course, School of Computing, KAIST

SKILLS

Programming Languages	Python, C/C++, JAVA, Verilog
Frameworks	PyTorch, Docker, Triton Inference Server, gRPC

REFERENCES

Prof. Dongman Lee
Professor of School of Computing at KAIST, Vice President of KAIST, **Email**: dlee@kaist.ac.kr
Prof. Tae-Kyun Kim
Professor of School of Computing at KAIST, Imperial College London, **Email**: kimtaekyun@kaist.ac.kr
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