Sungyeon **Kim**

Ph.D. Candidate @ Computer Vision Lab.

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Education

Computer Vision Lab, POSTECH (Pohang University of Science and Technology) — *Pohang, S.Korea*

PH.D CANDIDATE IN COMPUTER SCIENCE AND ENGINEERING — *Sep. 2018 - Current*

- Advised by Prof. Suha Kwak.
- Research on deep metric learning, image retrieval, representation learning, and other computer vision tasks.

DGIST (Daegu Gyeongbuk Institute of Science and Technology) — *Daegu, S.Korea*

B.S. IN UNDERGRADUATE STUDIES — *Mar. 2014 - Feb. 2018*

Work and Research Experience

MIT-IBM Watson AI Lab — *Cambridge, MA (Remote)*

RESEARCH COLLABORATION — *Dec. 2022 - Current*

- Research with Dr. Donghyun Kim.
- Researched on parameter-efficient learning and deep metric learning.

Vision Team, Naver — *Seongnam, S.Korea (Remote)*

RESEARCH INTERN — *Apr. 2022 - Jul. 2022*

- Research with Geonmo Gu, Byungsoo Ko.
- Researched on self-supervised representation learning.

Computer Vision Lab, POSTECH — *Pohang, S.Korea*

RESEARCH ASSISTANT — *Apr. 2018 - Aug. 2018*

- Advised by Prof. Suha Kwak.
- Researched on deep metric learning.

Vision and Learning Group, DGIST — *Daegu, S.Korea*

UNDERGRADUATE INTERN — *Dec. 2016 - Jan. 2018*

- Researched on deep metric learning and pose estimation.

Future Automotive Technology Research Center, DGIST — *Daegu, S.Korea*

UNDERGRADUATE INTERN — *Jun. 2016 - Aug. 2016*

- Researched on pedestrian detection in video for autonomous vehicles.
- Implemented API for pedestrian detection utilizing PyCaffe and PyQt.

Communication and Signal Processing Lab, DGIST — *Daegu, S.Korea*

UNDERGRADUATE INTERN — *Mar. 2014 – Jun. 2014*

- Researched on Muscle-computer connection systems and signal processing.
- Developed Electromyography (EMG) signal processing tool to reduce signal noise.
- Patented for rehabilitation program using measured EMG signals.

Publications

Preprints

- **Efficient and Versatile Robust Fine-Tuning of Zero-shot Models**
  Sungyeon Kim, Boseung Jeong, Donghyun Kim, Suha Kwak
- **FREST: Improving Robustness of Semantic Segmentation via Source-free Domain Adaptation with Feature Restoration**
  Sohyun Lee, Namyup Kim, **Sungyeon Kim**, Suha Kwak
- **Universal Metric Learning with Parameter-Efficient Transfer Learning**
  Sungyeon Kim, Donghyun Kim, Suha Kwak
  Arxiv Preprint (https://arxiv.org/abs/2309.08944)

Conference Papers

- **PromptStyler: Prompt-driven Style Generation for Source-free Domain Generalization**
  Junhyeong Cho, Gilhyun Nam, **Sungyeon Kim**, Hunmin Yang and Suha Kwak
  IEEE/CVF International Conference on Computer Vision (**ICCV**), 2023
- **HIER: Metric Learning Beyond Class Labels via Hierarchical Regularization**
  Sungyeon Kim, Boseung Jeong, Suha Kwak
  IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023
- **Cross-Domain Ensemble Distillation for Domain Generalization**
  Kyungmoon Lee, **Sungyeon Kim**, Suha Kwak
  European Conference on Computer Vision (**ECCV**), 2022
- **Combating Label Distribution Shift for Active Domain Adaptation**
  Sehyun Hwang, Sohyun Lee, **Sungyeon Kim**, Jungseul Ok, Suha Kwak
  European Conference on Computer Vision (**ECCV**), 2022
- **Self-Taught Metric Learning without Labels**
  Sungyeon Kim, Dongwon Kim, Minsu Cho, Suha Kwak
  IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2022
- **Learning to Generate Novel Classes for Deep Metric Learning for Improved Metric Learning**
  Kyungmoon Lee, **Sungyeon Kim**, Seunghoon Hong, Suha Kwak
  British Machine Vision Conference (**BMVC**), 2021
- **Embedding Transfer with Label Relaxation for Improved Metric Learning**
  Sungyeon Kim, Dongwon Kim, Minsu Cho, Suha Kwak
  IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021
- **Proxy Anchor Loss for Deep Metric Learning**
  Sungyeon Kim, Dongwon Kim, Minsu Cho, Suha Kwak
  IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2020
- **Deep Metric Learning Beyond Binary Supervision**
  Sungyeon Kim, Minkyo Seo, Ivan Laptev, Minsu Cho, Suha Kwak
  IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2019
  Oral presentation (288/5160 = **5.58%**)

Honors & Awards

2023 **Google PhD Fellowship Program**, Winner - Machine Perception, Speech Technology, and Computer Vision
Qualcomm Innovation Fellowship Korea, Finalist - HIER: Metric Learning Beyond Class Labels via Hierarchical Regularization
BK21 Best Paper Award, Winner - Self-Taught Metric Learning without Labels
BK21 Best Paper Award, Winner - Combating Label Distribution Shift for Active Domain Adaptation

2022 **Qualcomm Innovation Fellowship Korea**, Winner - Self-Taught Metric Learning without Labels
Qualcomm Innovation Fellowship Korea, Winner - Combating Label Distribution Shift for Active Domain Adaptation
CVPR Outstanding Reviewers, CVPR
BK21 Outstanding Paper Award, Winner - Embedding Transfer with Label Relaxation for Improved Metric Learning
IPIU Best Paper Award, Gold Prize - Offline Active Domain Adaptation

2021 **ICT Paper Contest**, 2nd place - Deep Metric Learning Beyond Binary Supervision
SKT AI Fellowship, Winner
POSTECHIAN Fellowship, Winner
IPIU Best Paper Award, Grand Prize - Embedding Transfer with Label Relaxation for Improved Metric Learning

2020 **Naver Ph.D Fellowship**, Winner
Qualcomm Innovation Fellowship Korea, Winner - Deep Metric Learning Beyond Binary Supervision

Reviewer

- **International Conference**
  - IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**) **[*Outstanding reviewer in 2022*]**
  - International Conference on Computer Vision (**ICCV**)
  - European Conference on Computer Vision (**ECCV**)
  - International Conference on Machine Learning (**ICML**)

- International Conference on Learning Representations (**ICLR**)
- Conference on Neural Information Processing Systems (**NeurIPS**)
- Association for the Advancement of Artificial Intelligence (**AAAI**)
- IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**)
- Asian Conference on Computer Vision (**ACCV**)
- The Machine Vision Applications (**MVA**)
- International Conference on Pattern Recognition (**ICPR**)

- **International Journal**

  - Transactions on Pattern Analysis and Machine Intelligence IEEE (**TPAMI**)
  - International Journal of Computer Vision (**IJCV**)

Patent

- KR101648638B1, Rehabilitation program creation method for muscle treatment and rehabilitation program providing apparatus for performing the method