Hankook Lee

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OBJECTIVE

I am a postdoctoral researcher at Korea Advanced Institute of Science and Technology (KAIST). Prior to this, I completed my Ph.D. degree in the School of Electrical Engineering at KAIST, advised by Jinwoo Shin. My research has investigated how to learn deep neural networks with limited human prior knowledge. Specifically, my interests include self-supervised learning, transfer learning, data augmentation, and real-world applications with limited labels.

EDUCATION

M.S. & Ph.D. *Mar. 2016 - Aug. 2022*
School of Electrical Engineering, KAIST, Republic of Korea
Advised by Prof. Jinwoo Shin

B.S. *Mar. 2010 - Feb. 2016*
Department of Mathematical Sciences & School of Computing (double major), KAIST, Republic of Korea
GPA: 3.93/4.3 (Magna Cum Laude)

EXPERIENCE

Post-doctoral Researcher *Sep. 2022 - Feb. 2023*
Information & Electronics Research Institute, KAIST, Republic of Korea

External Collaborator *Mar. 2021 - May. 2021*
Honglak Lee (University of Michigan), Kibok Lee (AWS), Kimin Lee (Berkeley)
- Developed a self-supervised learning algorithm for improving transferability of learned representations [7].

Visiting Student *Jan. 2020 - Mar. 2020*
Samsung Advanced Institute of Technology (SAIT), Republic of Korea
- Developed ML-based retrosynthesis algorithms [4-5].

Research and Development Engineer *Aug. 2013 - Dec. 2014*
Watcha Inc., Republic of Korea
- Built an automatic movie tagging system using Latent Dirichlet Allocation.
- Built a movie rating prediction system using non-negative matrix factorization.

PUBLICATIONS
(*: equal contribution)

[13] Jaehyun Nam, Jihoon Tack, Kyungmin Lee, **Hankook Lee** and Jinwoo Shin, "STUNT: Few-shot Tabular Learning with Self-generated Tasks from Unlabeled Tables", International Conference on Learning Representations (ICLR), *Spotlight presentation*, 2023

[12] Huiwon Jang*, **Hankook Lee*** and Jinwoo Shin, "Unsupervised Meta-learning via Few-shot Pseudo-supervised Contrastive Learning", International Conference on Learning Representations (ICLR), *Spotlight presentation*, 2023

[11] **Hankook Lee**, Jongheon Jeong, Sejun Park and Jinwoo Shin, "Guiding Energy-based Models via Contrastive Latent Variables", International Conference on Learning Representations (ICLR), *Spotlight presentation*, 2023

[10] Jihoon Tack, Jongjin Park, **Hankook Lee**, Jaeho Lee and Jinwoo Shin, "Meta-Learning with Self-Improving Momentum Target", Advances in Neural Information Processing Systems (NeurIPS), 2022

[9] Jongheon Jeong, Sihyun Yu, **Hankook Lee** and Jinwoo Shin, "Learning Robust Representations via Nuisance-extended Information Bottleneck", ECCV Workshop on Out-of-distribution Generalization in Computer Vision (OOD-CV), 2022

[8] Sukmin Yun, **Hankook Lee**, Jaehyung Kim and Jinwoo Shin, "Patchlevel Representation Learning for Selfsupervised Vision Transformers", IEEE Conference on Computer Vision and Pattern Recognition (CVPR), *Oral Presentation*, 2022

[7] **Hankook Lee**, Kibok Lee, Kimin Lee, Honglak Lee and Jinwoo Shin, "Improving Transferability of Representations via AugmentationAware SelfSupervision", Advances in Neural Information Processing Systems (NeurIPS), 2021

[6] Junsu Kim, Sungsoo Ahn, **Hankook Lee** and Jinwoo Shin, "Self-Improved Retrosynthetic Planning", International Conference on Machine Learning (ICML), 2021

[5] **Hankook Lee**, Sungsoo Ahn, Seung-Woo Seo, You Young Song, Eunho Yang, Sung Ju Hwang and Jinwoo Shin, "RetCL: A Selectionbased Approach for Retrosynthesis via Contrastive Learning", International Joint Conference on Artificial Intelligence (IJCAI), 2021

[4] Seung-Woo Seo*, You Young Song*, June Yong Yang, Seohui Bae, **Hankook Lee**, Jinwoo Shin, Sung Ju Hwang and Eunho Yang, "GTA: Graph Truncated Attention for Retrosynthesis", AAAI Conference on Artificial Intelligence (AAAI), 2021

[3] Sungsoo Ahn, Junsu Kim, **Hankook Lee** and Jinwoo Shin, "Guiding Deep Molecular Optimization with Genetic Exploration", Advances in Neural Information Processing Systems (NeurIPS), 2020

[2] **Hankook Lee**, Sung Ju Hwang and Jinwoo Shin, "Self-supervised Label Augmentation via Input Transformations", International Conference on Machine Learning (ICML), 2020

[1] Yunhun Jang*, **Hankook Lee***, Sung Ju Hwang and Jinwoo Shin, "Learning What and Where to Transfer", International Conference on Machine Learning (ICML), 2019

HONORS & AWARDS

Bronze Prize *2023*
Samsung Humantech Paper Awards, Republic of Korea

Winner *2019*
Qualcomm-KAIST Innovation Award, Republic of Korea

ICPC World Finalist *2013*
International Collegiate Programming Contest World Finals, St. Petersburg, Russia

1st Place (2012), **2nd Place** (2010) *2010-2012*
International Collegiate Programming Contest Asia Daejeon Regional, Republic of Korea

Gold Prize *2009*
Problem Solving Division, Korea Olympiad in Informatics (KOI), Republic of Korea

ACADEMIC SERVICES

Conference Reviewer
NeurIPS (2020-2022), ICLR (2020-2023), ICML (2020-2023), AAAI (2022-2023), Self-supervised Learning Workshops (ICML 2021, NeurIPS 2021, ECCV 2022)

Journal Reviewer
ACM ToMPECS, IEEE TPAMI, Journal of Machine Learning Research (JMLR)

INVITED TALKS

"Self-supervised Learning for Computer Vision and Chemistry", *2022*
Department of Artificial Intelligence, Hanyang University

"Self-supervised Label Augmentation via Input Transformations", *2021*
Samsung Electronics DIT Center, Republic of Korea

"Learning What and Where to Transfer". *2020*
Samsung Electronics DIT Center, Republic of Korea

"Learning What and Where to Transfer", *2019*
Summer Annual Conference of the Institute of Electronics and Information Engineers (IEIE), Republic of Korea

"Anytime Neural Prediction via Slicing Networks Vertically", *2018*
NAVER Labs, Republic of Korea

TEACHING EXPERIENCE

TA, "Segmentation and Object Detection", Samsung DS AI Expert Program *2020*
TA, "Optimization and Regulaization", SK Hynix ML Program *2019*
TA, "Transfer and Multitask Learning", Samsung DS AI Expert Program *2019*
TA, "Regression", Seongnam-KAIST AI Program *2018*
TA, "Regression", KB-KAIST AI Program *2017-2018*

TECHNICAL SKILLS

C/C++, Python, Pytorch, Tensorflow