BYUNG HYUN LEE

CONTACT INFORMATION

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RESEARCH INTERESTS

My research focuses on artificial intelligence (AI), particularly in continual learning, machine unlearning, and their applications to foundation models. I'm motivated to research on forgetting in neural networks — an essential challenge to address for lifelong adaptation and machine unlearning for foundation models. My work explores two key areas:

- Continual Learning for Foundation Models
- Machine Unlearning and Concept Erasing for Generative AI

Additionally, I'm interested in model acceleration and image restoration.

EDUCATION

- Seoul National University (SNU) Combined M.S./Ph.D Program in Electrical and Computer Engineering (ECE)
- Ulsan National Institute of Science and Technology (UNIST) B.S. in Electical Engineering, GPA: 4.04/4.30

RESEARCH ADVISOR

• Se Young Chun: Professor, Department of Electrical and Computer Engineering (ECE), SNU

PUBLICATIONS

- Localized Concept Erasure for Text-to-Image Diffusion Models Using Training-Free Gated Low-Rank Adaptation B. H. Lee*, S. Lim*, S. Y. Chun (*co-first authors) Conference on Computer Vision and Pattern Recognition (CVPR, accepted), 2025
- Concept pinpoint eraser for text-to-image diffusion models via residual attention gate B. H. Lee^{*}, S. Lim^{*}, S. Lee, D. U. Kang, S. Y. Chun (*co-first authors) International Conference on Learning Representations (ICLR, accepted), 2025
- Continual Test-Time Adaptation for Robust Remote Photoplethysmography Estimation H. Lee, H. Lee, **B. H. Lee**, S. Y. Chun IEEE Access, 2025
- Selective Concept Erasing for Safe Diffusion Models
 B. H. Lee, S. Lim, S. Y. Chun Korea Signal Processing Conference (Best Poster Presentation Award), 2024
- Doubly perturbed task free continual learning
 B. H. Lee, M. Oh, S. Y. Chun
 Proceedings of the AAAI Conference on Artificial Intelligence (AAAI, oral), 2024

Mar 2021 - present

Mar 2015 - Aug 2018

- Expert classifier ensemble based post-processing correction for unbiased scene graph generation S. Lee, B. H. Lee, S. Y. Chun Workshop on Image Processing and Image Understanding (IPIU), 2024
- Towards accelerating model parallelism in distributed deep learning systems H. Choi^{*}, **B. H. Lee**^{*}, S. Y. Chun, J. Lee (*co-first authors) PLOS One, 2023
- Online Continual Learning on Hierarchical Label Expansion
 B. H. Lee*, O. Jung*, J. Choi, S. Y. Chun (*co-first authors) International Conference on Computer Vision (ICCV), 2023
- All-in-one image restoration for unknown degradations using adaptive discriminative filters for specific degradations D. Park, B. H. Lee, S. Y. Chun Conference on Computer Vision and Pattern Recognition (CVPR), 2023
- Efficient and accurate quantized image super-resolution on mobile npus, mobile ai & aim 2022 challenge: report A. Ignatov et al. (including **B. H. Lee**) Workshops on European Conference on Computer Vision (ECCV), 2022
- Efficient single-image depth estimation on mobile devices, mobile AI & AIM 2022 challenge: report A. Ignatov et al. (including **B. H. Lee**) Workshops on European Conference on Computer Vision (ECCV), 2022
- Uncertainty-based dual domain low-dose X-ray CT reconstruction S. Lee, D. U. Kang, **B. H. Lee**, S. Y. Chun Korean Signal Processing Conference, 2022
- Empirically Accelerating Scaled Gradient Projection Using Deep Neural Network for Inverse Problems in Image Processing

B. H. Lee, S. Y. Chun International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2021

PATENTS

- All-in-one image quality improvement model providing method performing image quality restoration for multiple image quality degradation factors
 S. Y. Chun, D. Park, B. H. Lee
 U.S. Patent, Filed, 2023
- Method for providing all-in-one image quality improvement model that performs image quality restoration for multiple image quality inhibitors
 S. Y. Chun, D. Park, B. H. Lee
 Korea Patent, Filed, 2023

PRESENTATIONS

• Continual Learning and Its Applications in Magnetic Resonance Imaging Advanced neuroimaging and AI workshop, SNU, 2024

FELLOWSHIP

Brain Korea 21 Four Program

RESEARCH EXPERIENCES

Biomedical Medical Image Processing Lab, UNIST Researcher (Advisor: Prof. Se Young Chun)

Biomedical Medical Image Processing Lab, UNIST Student Intership (Advisor: Prof. Se Young Chun)

EXTRACURRICULAR EXPERIENCES

Military Service, Republic of Korea Army Discharged as Sergeant

Pinocchio (Robot Club), UNIST Education Director

May 2020 - Feb 2021

July 2017 - Aug 2018

Sep 2018 - Apr 2020

Mar 2015 - Aug 2018