

BYUNG HYUN LEE

CONTACT INFORMATION

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RESEARCH INTERESTS

My research focuses on forgetting in neural networks — an essential challenge to address for continual learning and machine unlearning in foundation models. I've conducted research on deep neural network architectures that address conflicting objectives and continual learning algorithms. Recently, I've been working on concept erasing for responsible generative AI via continual learning approaches. My work explores two key areas:

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

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

EDUCATION

- **Seoul National University (SNU)** *Mar 2021 - present*
Combined M.S./Ph.D Program in Electrical and Computer Engineering (ECE)
- **Ulsan National Institute of Science and Technology (UNIST)** *Mar 2015 - Aug 2018*
B.S. in Electrical 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

- [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

PRINPRINTS / MANUSCRIPTS UNDER REVIEW

- Continual Multiple Instance Learning with Enhanced Localization for Histopathological Whole Slide Image Analysis
B. H. Lee, W. Jeong, W. Han, K. Lee, S. Y. Chun
Under review, 2025
- Unlearning the Unpromptable: Prompt-free Instance Unlearning in Diffusion Models
K. R. Lee*, K. H. Lee*, S. Hong, **B. H. Lee**, S. Y. Chun
Under review, 2025
- [Geometrical Properties of Text Token Embeddings for Strong Semantic Binding in Text-to-Image Generation](#)
H. Seo*, J. Bang*, H. Lee*, J. Lee, **B. H. Lee**, S. Y. Chun
Under review, 2025

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

RESEARCH EXPERIENCES

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

May 2020 - Feb 2021

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

July 2017 - Aug 2018

EXTRACURRICULAR EXPERIENCES

Military Service, Republic of Korea Army
Discharged as Sergeant

Sep 2018 - Apr 2020

Pinocchio (Robot Club), UNIST
Education Director

Mar 2015 - Aug 2018