

# BYUNG HYUN LEE

## CONTACT INFORMATION

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**Website:** <https://hyun1a.github.io>

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## RESEARCH INTERESTS

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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

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- **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

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

## PUBLICATIONS

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- [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

## PREPRINTS / MANUSCRIPTS UNDER REVIEW

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- 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

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- **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

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

RESEARCH EXPERIENCES

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|---|-----------------------------|
| <b>Biomedical Medical Image Processing Lab</b> , UNIST<br>Researcher (Advisor: Prof. Se Young Chun)         | <i>May 2020 - Feb 2021</i>  |
| <b>Biomedical Medical Image Processing Lab</b> , UNIST<br>Student Internship (Advisor: Prof. Se Young Chun) | <i>July 2017 - Aug 2018</i> |

EXTRACURRICULAR EXPERIENCES

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| <b>Military Service, Republic of Korea Army</b><br>Discharged as Sergeant | <i>Sep 2018 - Apr 2020</i> |
| <b>Pinocchio (Robot Club)</b> , UNIST<br>Education Director               | <i>Mar 2015 - Aug 2018</i> |