BYUNG HYUN LEE

CONTACT INFORMATION

Affiliation: Department of Electrical and Computer Engineering, Seoul National University
Email: ldlqudgus756@snu.ac.kr
Website: https://hyun1a.github.io
LinkedIn: https://www.linkedin.com/in/bh-lee

RESEARCH INTERESTS

My research focuses on forgetting in AI — an essential ML challenge for machine unlearning, continual learning, and trustworthy foundation models or agentic AI. Specifically, I have investigated forgetting in vision models and image generative models. More recently, I'm working on extending to trustworthy AI for large multi-modal models. My work explores two key areas:

- Machine unlearning for responsible generative AI
- Preventing catastrophic forgetting in foundation models and agentic AI.

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

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 Electical Engineering, GPA: 4.04/4.30

RESEARCH ADVISOR

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

PUBLICATIONS (Top AI Conference Papers)

- 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
  International Conference on Computer Vision (ICCV), 2025
- 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), 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), 2025
- 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
- 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

PUBLICATIONS (Journal Papers)

- Continual Test-Time Adaptation for Robust Remote Photoplethysmography Estimation
  H. Lee, H. Lee, **B. H. Lee**, S. Y. Chun
  IEEE Access, 2025
- 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

PUBLICATIONS (Short, Workshop, or Domestic Papers)

- Selective Concept Erasing for Safe Diffusion Models
  B. H. Lee, S. Lim, S. Y. Chun
  Korea Signal Processing Conference (Best Poster Presentation Award), 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
- Efficient and accurate quantized image super-resolution on mobile npus, mobile ai & aim 2022 challenge: report
  A. Ignatov et al. (including **B. H. Lee**)
  European Conference on Computer Vision Workshops (ECCVW), 2022
- Efficient single-image depth estimation on mobile devices, mobile AI & AIM 2022 challenge: report
  A. Ignatov et al. (including **B. H. Lee**)
  European Conference on Computer Vision Workshops (ECCVW), 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

- 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

RESEARCH EXPERIENCES

- **National AI Foundation Model Project in South Korea**, NAVER Cloud — *Oct 2025 - present*
  Research Residence
- **Biomedical Medical Image Processing Lab**, UNIST — *May 2020 - Feb 2021*
  Researcher (Advisor: Prof. Se Young Chun)
- **Biomedical Medical Image Processing Lab**, UNIST — *July 2017 - Aug 2018*
  Student Intership (Advisor: Prof. Se Young Chun)

PRESENTATIONS

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

AWARDS AND HONORS

- **Qualcomm Innovations Fellowship Korea** — *2025*
  Best paper finalist
- **2nd Place in Report Generation in Pathology using Pan-Asia Gigapixel WSIs** (€400) — *2025*
  Challenge by International Conference on MICCAI (Served as the team leader, 26 teams participated)
- **Yulchon AI Star Scholarships** (₩8,000,000) — *2025*
  Youlchon Foundation & SNU AI Institute

EXTRACURRICULAR EXPERIENCES

- **Military Service, Republic of Korea Army** — *Sep 2018 - Apr 2020*
  Discharged as Sergeant
- **Pinocchio (Robot Club)**, UNIST — *Mar 2015 - Aug 2018*
  Education Director