Jongwoon Lee

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OBJECTIVE

I am a pathologist who has developed and deployed multiple deep learning architectures for medical image analysis. My technical work spans from implementing ResNet and Vision Transformer architectures for pathological image classification to optimizing YOLO-based detection models for clinical applications. My current research in Brain and Cognitive Engineering focuses on the mathematical foundations of deep learning, particularly optimization theory and neural architecture design. This combination of practical model development and theoretical understanding, coupled with my medical expertise, uniquely positions me to advance healthcare through innovative deep learning approaches. I aim to tackle fundamental challenges in medical AI, from robust model development to theoretical frameworks for neural networks.

PROFESSIONAL EXPERIENCE

Korea University, Guro Hospital, South Korea 03/2024 - Present
Clinical Assistant Professor

- Served as an evaluator for the performance of breast cancer metastatic lymph node segmentation at DeepBio, an AI company.
- Conducted sign-outs for surgical pathology and cytopathology while providing mentorship to residents and medical students.
- Engaged in research projects and contributed to writing scientific papers, leading interdepartmental and intradepartmental conferences.

Dept. of Pathology, Asan Medical Center, South Korea 03/2018 – 02/2024
Resident and Fellow

- Oversaw and facilitated 70+ interdepartmental and intradepartmental conferences.
- Served as Chief Resident for six months and subsequently appointed as Chief Fellow for an additional six months.

EDUCATION

Ph.D. Candidate, Department of Brain and Cognitive Engineering, Korea University **Seoul, KR**
Advisor: Prof. Dong-Joo Kim, Dept. of Brain and Cognitive Engineering, Korea University 2024-Present

M.D./Ph.D., Medicine, Ulsan University College of Medicine **Seoul, KR**
Advisor: Assistant Prof. Hee Jin Lee, Dept. of Pathology, Asan Medical Center 2022-2024

M.Sc., Medicine, Ulsan University College of Medicine **Seoul, KR**
Advisor: Prof. Jihun Kim, Dept. of Pathology, Asan Medical Center 2019-2021

M.D., Ulsan University College of Medicine **Seoul, KR**
2010-2017

PUBLICATIONS (FIRST AUTHOR)

- **Lee J**, et al. Breast Cancer Research, 2024; "Factors Associated with Engraftment Success of Patient-Derived Xenografts of Breast Cancer"
- **Lee J**, et al. Journal of Pathology and Translational Medicine, 2024; "High-Grade Transformation of a Pancreatic Neuroendocrine Microtumor in a Patient with Von Hippel-Lindau Syndrome: A Case Report"
- **Lee J**, et al. Journal of Pathology and Translational Medicine, 2022; "Extremely Well-Differentiated Adenocarcinoma of the Stomach: Diagnostic Pitfalls in Endoscopic Biopsy"
- **Lee J**, et al. Journal of Pathology and Translational Medicine, 2020; "Breast Implant-Associated Anaplastic Large Cell Lymphoma: The First South Korean Case"
- **Lee J**, et al. Neurointervention, 2015; "Enlarged Parent Artery Lumen at Aneurysmal-Neck Segment in Wide-Necked Distal Internal Carotid Artery Aneurysms"

SUBMITTED MATERIAL UNDER REVIEW

- **Lee J**, et al. Evaluation of Prognostic Factors for Oral Tongue Squamous Cell Carcinoma: Significance of Invasive Front Tumor Infiltrating Lymphocytes Assessed with Artificial Intelligence, Lymph Node Ratio, Tumor Size, and Depth of Invasion: Submitted material under review, 2024.12
- **Lee J**, Yang Y., Jung D., et al., The expression and clinical relevance of LRRC15+ cancer-associated fibroblast in colorectal cancer, Submitted material under review, 2024.09

CONFERENCE PRESENTATION

The United States and Canadian Academy of Pathology 2025
- Weakly Supervised Learning for Predicting Recurrence and Invasion in Bladder Cancer from Transurethral Resection Specimens (Poster).

American Society of Clinical Oncology (ASCO) Breakthrough 2024
- Evaluation of Prognostic Factors for Oral Tongue Squamous Cell Carcinoma: Significance of Invasive Front Tumor Infiltrating Lymphocytes, Lymph Node Ratio, Tumor Size, and Depth of Invasion (Poster).

Asian Society of Digital Pathology 2024
- Artificial Intelligence Assisted Tumor Infiltrating Lymphocytes as Predictors of Tumor Recurrence in Transurethral Resection of Bladder Cancer (Poster).

The 76th Annual Fall Meeting of the Korean Society of Pathologists 2024
- Epithelial-to-mesenchymal Transition in the Extranodal Extension of Distal Extrahepatic Bile Duct Carcinoma with Artificial Intelligence-assisted Analyses (International Poster Presentation).

San Antonio Breast Cancer Symposium 2023
- The Principal Factors Associated with PDX Engraftment in Breast Cancer (Poster).

Korean Society of Pathology Spring Conference 2023
- My Interesting Case: Extrauterine and Extraovarian Müllerian Adenosarcoma (Speaker).

Korean Society of Pathology Fall Conference 2023
- A Comparative Study on HER2 Immunohistochemical scoring performance using Vision Transformer and DenseNet-201 (Poster).
- Prognostic Impact of Extranodal Extension in Distal Extrahepatic Bile Duct carcinoma (Poster).

San Antonio Breast Cancer Symposium 2022
- The Principal Factors Associated with the Engraftment Success of Patient-Derived Xenograft of Breast Cancer (Poster).

Korean Society of Pathology Fall Conference 2022
- The Clinicopathologic Variables Associated with PDX Engraftment (Poster).
- Number of Metastatic Lymph Nodes and Perineural Invasion (English Platform).

HONORS AND AWARDS

Selected for USCAP 2025 International Conference Travel Grant, Korean Society of Pathologists 2024
Excellence in Research Award, Asan Medical Center 2021
Best Abstract Award, Korean Society of Cytopathology, Fall Meeting
"Malignant lymphoma of uterine cervix with carcinoma-like morphology on cervicovaginal smear: A case report 2020

Awarded Medical School Scholarship Type A at University of Ulsan Graduate School of Medicine, totaling 8,155,000 Won over 8 semesters 2019-2023
Awarded merit-based scholarships totaling 16,432,000 Won over 7 semesters at University of Ulsan College of Medicine 2012-2015

CERTIFICATIONS

- Board Certification in Pathology, South Korea, 2022
- Medical License, South Korea, 2017
- TOEFL IBT 115/120, 2009