

Woojin Chung | M.S. Student in Korea

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Summary

I earned my B.S. and am now pursuing an M.S. in Biomedical Engineering at Hankuk University of Foreign Studies under the supervision of Professor Nam. During my studies, I have been working on applying artificial intelligence to medical imaging analysis, including areas of computational pathology, MRI, and CTA. Currently, my research focuses on two primary fields. The first is using foundation models in computational pathology to enhance dataset generalization. The second is predicting dynamic changes in contrast-enhanced imaging using deep learning-based image synthesis, particularly in DCE-MRI and multiphase CTA. As shown in my curriculum vitae, I am committed to continuing my growth as a versatile researcher, skilled in programming, research, and academic writing.

Research Interests

Deep Learning	Generative Models, Foundation Models, Explainable AI
Computational Pathology	Lymph Node Metastasis, Whole-Slide Imaging
MR Imaging	Breast Cancer, Dynamic Contrast-Enhanced MRI
CT Angiography	Acute Ischemic Stroke, Multiphase CTA

Education

Mar 2024 – Present	M.S. in Biomedical Engineering , Hankuk University of Foreign Studies. Advisor: Yoonho Nam GPA: 4.5/4.5
Mar 2017 – Feb 2024	B.S. in Biomedical Engineering , Hankuk University of Foreign Studies. GPA: 3.9/4.5 Thesis topic: <i>Exploration of implicit neural representation networks for effective compression of whole-slide images</i>

Publications

Journal Articles




- 1 **W. Chung**, J. Jang, and Y. Nam, "Quantitative susceptibility mapping of oxygen metabolism: A feasibility study utilizing a large-scale clinical dataset," *Investigative Magnetic Resonance Imaging*, vol. 27, no. 4, pp. 221–225, 2023. [DOI: https://doi.org/10.13104/imri.2023.0013](https://doi.org/10.13104/imri.2023.0013).

Conference Proceedings




- 1 **[Pre-print] W. Chung**, Y. Park, and Y. Nam, "Foundation model ensemble for out-of-distribution generalization: Predicting lymph node metastasis in early gastric cancer using whole-slide imaging," in *Medical Imaging with Deep Learning*, 2025. [URL: https://openreview.net/forum?id=JspipsZKuo](https://openreview.net/forum?id=JspipsZKuo).
- 2 **W. Chung**, Y. Park, and Y. Nam, "Autoencoder-based feature transformation with multiple foundation models in computational pathology," in *International Workshop on Foundation Models for General Medical AI*, Springer, 2024, pp. 40–49. [DOI: https://doi.org/10.1007/978-3-031-73471-7_5](https://doi.org/10.1007/978-3-031-73471-7_5).

Conference Presentations

International



- 2025  **ISMRM Oral Presentation (Expected in May)**
Title: Predicting Delayed Phase Contrast-Enhanced MR Images from Early Phase Contrast-Enhanced MR Images Using Deep Learning-Based Iterative Network
- 2025  **MIDL Poster Presentation (Expected in July)**
Title: Foundation Model Ensemble for Out-of-Distribution Generalization: Predicting Lymph Node Metastasis in Early Gastric Cancer Using Whole-Slide Imaging
- 2024  **MICCAI Workshop MedAGI Poster Presentation**
Title: AutoEncoder-Based Feature Transformation with Multiple Foundation Models in Computational Pathology

Domestic


- 2024  **ICMRI Poster Presentation**
Title: Deep Learning-Based Dynamic Information Embedding for Synthesizing Arbitrary Time-Point Contrast-Enhanced Inner Ear MR Images
- 2023  **ICMRI Poster Presentation**
Title: Automatic Optimization of Multi-Loss Weights for MR Image Synthesis Using Coefficient of Variation Analysis
- 2022  **ICMRI Poster Presentation**
Title: Automatic Segmentation and Assessment Method for QSM-Based Oxygen Metabolism Analysis in the Superior Sagittal Sinus

Research Projects


Seoul St. Mary's Hospital (Seoul, Korea)

- Mar 2022 – Dec 2022  Analyzed oxygen metabolism in QSM images using deep learning-based segmentation, focusing on its relationship with the presence of the APOE4 in patients with cognitive impairment.
- Mar 2024 – Present  Developing a deep learning model to synthesize multi-phase delayed contrast-enhanced breast MR images from early-phase acquisitions, enabling dynamic enhancement prediction.


Busan Paik Hospital (Busan, Korea)

- Aug 2023 – Aug 2024  Developed a generative adversarial network (GAN)-based model for virtual synthesis of 1-hour delayed contrast-enhanced inner ear MR images from early-phase acquisitions.




CHA Bundang Medical Center (Seongnam, Korea)

- Jan 2023 – Present  Developing a patch-based deep learning model to predict lymph node metastasis in early gastric cancer WSIs, leveraging foundation models to enhance generalization across datasets with different distributions.

Ajou University Hospital (Suwon, Korea)



- Mar 2024 – Present  Developing a deep learning-based method to quantify and visualize collateral status in acute ischemic stroke using multiphase CTA.

Honors and Awards





- 2025  **ISMRM Annual Meeting & Exhibition Educational Stipend**
- 2022  **Best Award, AI Idea Festival**
Organized by Hankuk University of Foreign Studies AI Education Institute
- 2022  **3rd Place, Burn Diagnosis AI Challenge**
Organized by Seoul National University R&DB Foundation

Teaching Experiences

Programming Instructor

- Mar 2022 – Dec 2022  Coding Class at Pungsaeng High School, a science-focused school in Korea
- Feb 2022 – Feb 2022  Shell & Shell Editors session of the HUFS Missing Semester at Hankuk University of Foreign Studies, Korea

Teaching Assistant




- Fall 2024  Linear Algebra
- Spring 2024  Biomedical Artificial Intelligence
- Fall 2023  Medical Image Processing & Laboratory
- Spring 2023  Biomedical Artificial Intelligence

Miscellaneous Experience





Academic Activities

- 2025  Program committee for IJCNN Special Session: Foundation Models in Medicine



Club Activities

- 2023  Programming Mentor at LIKELION, Student-Run Club of Programming
- 2022  Programming Mentor at LIKELION, Student-Run Club of Programming
- 2021  Mentee at LIKELION, Student-Run Club of Programming

Software Development

- 2025  **Carrot-Viewer (Ongoing):** A viewer software that supports medical imaging file formats such as DICOM and NIfTI, designed to easily integrate deep learning-based AI projects.  Github: <https://github.com/goglxych97/Carrot-Viewer.git>
- 2024  **PathoPatch:** A software tool designed to facilitate easy annotation of patches extracted from whole-slide images.  Github: <https://github.com/goglxych97/PathoPatch.git>

References

-  **Yoonho Nam**, Assistant Professor, Biomedical Engineering. **Hankuk University of Foreign Studies**, yoohnam@hufs.ac.kr
-  **Jin Wook Choi**, Professor, Department of Radiology. **Ajou University School of Medicine**, radjwchoi@gmail.com