

Chanyu Moon

Ph.D. Student, KAIST Graduate School of AI

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Education

- Ph.D. Korea Advanced Institute of Science and Technology (KAIST)**, Artificial Intelligence Korea
Aug 2026 – present
- Advisor: Prof. Jong Chul Ye ([BISPL](#))
- M.S. Daegu Gyeongbuk Institute of Science and Technology (DGIST)**, Interdisciplinary Studies of Artificial Intelligence Daegu, Korea
Feb 2024 – Aug 2026
- Advisor: Prof. Ji-Woong Choi (Communications and Signal Processing Lab)
 - Research focus: Neural decoding, bio-signal processing, cross-modal learning
 - Key coursework: Advanced Deep Learning, Mathematics for Machine Learning, Brain-Machine Interface, Computational Neuroscience, Brain Disorders
- B.S. Daegu Gyeongbuk Institute of Science and Technology (DGIST)**, Electrical Engineering and Computer Science Daegu, Korea
Feb 2020 – Feb 2024
- Dean's List (GPA 4.0 or higher out of 4.3)
 - Undergraduate research: ESG-based exoskeleton robot control (UGRP)
 - Key coursework: Intro to AI / Deep Learning / Computer Vision, Reinforcement Learning, Data Science, Data Structures, Algorithms, Operating Systems, System Programming, Linear Algebra, Probability & Statistics, Neuroscience I

Publications

- OFF-CLIP: Improving Normal Detection Confidence in Radiology CLIP with Simple Off-Diagonal Term Auto-Adjustment** May 2025
- Junhyun Park*, **Chanyu Moon***, Donghwan Lee, Kyungsu Kim†, Minho Hwang†
papers.miccai.org/miccai-2025/0649-Paper3740.html (MICCAI 2025, early accept (top 9%))
- Efficient Biomedical Time-series Contrastive Learning: Revisiting Taylor Expansion in Loss Optimization** Oct 2025
- Yunho Jeong*, **Chanyu Moon***, Jinmo Kim, Ji-Woong Choi†
ieeexplore.ieee.org/abstract/document/11388516 (IEEE ICTC 2025)
- A Study on the Trends of Adaptive Deep Brain Stimulation in Parkinson's Disease** Feb 2025
- Chanyu Moon**, Ji-Woong Choi†
www.dbpia.co.kr/journal/articleDetail?nodeId=NODE12132791 (KICS Conference 2025, oral presentation)

Projects

- Muscle-Guided Latent Representation Distillation for Spinal-Based Motor Intention Decoding** Oct 2025 – Aug 2026
- Lead researcher (M.S. thesis research).
- Developed an Electrospinogram (ESG)-based motor decoding framework to address the limitations of EMG/EEG-based decoding for neuroprosthetic control.
 - Designed ESG-CL (contrastive learning) and ESG-DT (domain translator), which use EMG-derived latent representations to decouple motor features from motor-sensory intertwined ESG signals.
 - Built the end-to-end cross-modal training pipeline, including opposite-limb and inter-subject scenarios and a simulated quadriplegia (zero-EMG) setting.

OFF-CLIP: Improving Normal Detection Performance on Chest X-ray

June 2024 – Sept 2025

Co-first author, MICCAI 2025.

- Redefined the InfoNCE loss to treat all normal samples as positive pairs (off-diagonal term loss), preventing mis-clustering of semantically identical normal cases.
- Implemented all baseline models and built the benchmarking environment for comparative analysis.

Efficient Biomedical Time-series Contrastive Learning

Feb 2025 – Oct 2025

Co-first author, ICTC 2025.

- Formulated a first-order Taylor approximation of InfoNCE that bypasses the batch-by-batch similarity matrix.
- Achieved up to 7.3x speedup and 8.5x peak-memory reduction on TS2Vec (UCI HAR) with comparable accuracy.

Experience

Intelligence Augmentation Group, DGIST, Undergraduate Research Intern

Daegu, Korea

- Supervisor: Prof. Jean Young Song

Dec 2023 – Jan 2024

- Investigated Human-AI interaction methodologies and data labeling efficiency for AI training.

2 months

McMaster University, International Research Intern

Hamilton, Canada

- Supervisor: Prof. Qiyin Fang

July 2023 – Aug 2023

- Developed smart home system frameworks for elderly care, focusing on automated sensor integration.

2 months

Communications and Signal Processing Lab, DGIST, Undergraduate Research Intern

Daegu, Korea

- Supervisor: Prof. Ji-Woong Choi

June 2022 – July 2022

- Applied general linear models (GLM) to extract features from bio-signals.

2 months

Undergraduate Research Program (UGRP), DGIST, Student Researcher

Daegu, Korea

- Supervisor: Prof. Ji-Woong Choi

Jan 2022 – Dec 2022

- Project: Development of an ESG-based control system for exoskeleton robots; developed a model estimating motor intention from EMG.

1 year

International College Student Creative Car Competition, Software Team Member

Korea

- Developed an object detection model.

Mar 2022 – Oct 2022

8 months