



JAEWOO LEE

Ph.D. Applicant @ Seoul, Korea
AI Researcher

 [g-jwlee.github.io](https://github.com/g-jwlee)
 jwlee8877@gmail.com
 [+82 10-2329-4196](tel:+821023294196)

RESEARCH INTERESTS

My goal is to promote AI democratization by developing resource-efficient multimodal models that makes AI more accessible and interactive for anyone. Lowering resource barriers and enhancing language and multimodal understanding will broaden AI use for individuals and empower diverse groups to participate in AI development.

- **Multimodal:** Vision-Language, Audiovisual, Interleaved modalities
- **Efficiency in data & algorithms:** Data selection, Continual learning, Curriculum learning ([empirical study](#))
- **Efficiency in systems:** Retrieval-Augmented Generation, Information retrieval
- **Efficiency in architectures:** Mixture of Experts, Token pruning
- **Interpretability:** Interpretable LLM and MLLM, Attribution methods

EDUCATION

Korea Advanced Institute of Science and Technology (KAIST)

Seoul, South Korea

Master of Science in Artificial Intelligence (GPA: 3.88/4.3)

Mar. 2023 – Aug. 2024

- Advisor: Prof. Sung-Ju Hwang
- A half-year early graduation.
- Thesis: Efficient Training Techniques for Multimodal Learning

Korea Advanced Institute of Science and Technology (KAIST)

Daejeon, South Korea

Bachelor of Science in Electrical Engineering (GPA: 4.11/4.3)

Mar. 2020 – Feb. 2023

- Summa Cum Laude.
- A one-year early graduation.
- **Selected Coursework:** Programming Structure, Data Structures and Algorithms, Digital System Design, Introduction to Optimization Techniques, Information Theory, Machine Learning Basics and Practices, Deep learning for Computer Vision, Engineering Random Processes, Signals and Systems, Digital Speech Processing

PUBLICATIONS

[P1] Unified Multi-Modal Interleaved Document Representation for Information Retrieval

[Jaewoo Lee](#)^{*}, Joonho Ko^{*}, Jinheon Baek^{*}, Soyeong Jeong, Sung Ju Hwang (* denotes equal contribution)

Preprint (submitted to ICLR 2025)

[C1] Concept-skill Transferability-based Data Selection for Large Vision-Language Models

[Jaewoo Lee](#), Boyang Li[^], Sung Ju Hwang[^] (^ denotes equal advising)

Conference on Empirical Methods in Natural Language Processing (EMNLP, 2024)

[C2] STELLA: Continual Audio-Video Pre-training with Spatio-Temporal Localized Alignment

[Jaewoo Lee](#)^{*}, Jaehong Yoon^{*}, Wonjae Kim, Yunji Kim, Sung Ju Hwang (* denotes equal contribution)

International Conference on Machine Learning (ICML, 2024)

[C3] Sound-based drone fault classification using multitask learning

Wonjun Yi, Jung-Woo Choi [Jaewoo Lee](#)

International Congress on Sound and Vibration (ICSV, 2023)

RESEARCH EXPERIENCES

DeepAuto ai

AI Researcher

Seoul, South Korea

Aug. 2024 - current

- Currently working on a layer-wise LLM compression approach to reduce deployment costs.

MLAI Lab-KAIST

Master's Degree Student Researcher (Advisor: Sung Ju Hwang)

Seoul, South Korea

Mar. 2023 - Aug. 2024

- [P1] Suggested an information retrieval framework using VLMs to integrate interleaved multimodal content from a document into a unified document representation.
- [C1] Proposed a visual instruction data pruning method that uses a small model to cluster data into concept-skill compositions and selects data based on cluster transferability and density.
- [C2] Addressed dynamic multimodal semantics in audio-video continual pre-training by introducing an audio-video patch selection method that leverages cross-attention maps.

Smart Sound Systems Lab-KAIST

Undergraduate Student Researcher (Advisor: Jung-Woo Choi)

Daejeon, South Korea

Sep. 2021 - Jun. 2022

- [C3] Developed a multitask learning approach and audio datasets ([link](#)) for UAV anomaly detection.

Urban Robotics Lab-KAIST

Undergraduate Student Researcher (Advisor: Hyun Myung)

Daejeon, South Korea

Jun. 2021 - Aug. 2021

- Worked on Simultaneous Localization and Mapping (SLAM) for autonomous navigation of self-driving cars.

ACADEMIC SERVICES

- **Reviewer:** Neural Information Processing Systems Workshop on Continual Foundation Model, 2024

AWARDS & HONORS

• Summa Cum Laude Award

Graduated with highest honors and a 4.11/4.3 GPA.

KAIST

Feb. 2023

• National Scholarship for Science & Engineering

Awarded for outstanding academics and potential impact in science and technology.

Korea Student Aid Foundation

Sep. 2022 - Feb. 2023

• Encouragement Award for the Undergraduate Research Program

Earned a top ranking in the Undergraduate Research Program, competing against 65 teams.

KAIST

Aug. 2022

• College of Engineering Dean's List

Achieved within the top 3% of academic performance in the Electrical Engineering Department.

KAIST

Aug. 2022

• School of Freshman Dean's List

Achieved within the top 2% in academic excellence among Freshman.

KAIST

Aug. 2020

SKILLS

Programming Ability - Python, C, MATLAB, System Verilog, Git, Linux, L^AT_EX, Markdown

Language Ability - Native in **Korean**, Fluent in **English** (IBT TOEFL: 110)

EXTRACURRICULAR ACTIVITIES

LS Dream Science Class

Dec. 2019 - Feb. 2020

- Participated in a tutoring program for underprivileged students, teaching science for 6 hours a day for two months.

The Republic of Korea's Army Sergeant

Feb. 2018 - Oct. 2019

- Served as a supply specialist in an armored battalion.
- Promoted to sergeant and corporal one month early, respectively, due to excellence in duty.