HYUKJIN KIM

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RESEARCH INTERESTS

Multimodal Learning for Predictive Physical Interaction Understanding

My research aims to develop multimodal models that understand how agents interact with objects and predict the physical consequences of their actions. Building on my work in temporal action analysis, vision-language retrieval, and domain generalization, I am interested in learning transferable representations of motion, object states, and interaction context from multimodal observations. Ultimately, I seek to anticipate future interactions and action outcomes to support reliable decision-making in dynamic, real-world environments.

EDUCATION

Sep. 2025 – Present **Yonsei University** Seoul, Republic of Korea
M.S. in Electrical & Electronic Engineering (expected Aug. 2027)
- YU-KIST cooperative graduate program; research conducted at Korea Institute of Science and Technology
- Combined M.S./Ph.D. program; transferring to the M.S. track in Jan. 2027
- Advisors: Dr. Heeseung Choi (KIST), Prof. Bumsub Ham (Yonsei University)
- GPA: **3.81/4.30**

Mar. 2023 – Aug. 2025 **Yonsei University** Seoul, Republic of Korea
B.S. in Electrical & Electronic Engineering
- GPA: **3.83/4.30** (96.0/100)
- Capstone: *Research on Improving the Performance of Open-Vocabulary Object Detection*

Mar. 2019 – Feb. 2023 **Inha University** Incheon, Republic of Korea
Undergraduate coursework in Electrical Engineering; transferred to Yonsei University in Mar. 2023
- GPA: **3.71/4.00**
- Changed major from Civil Engineering to Electrical Engineering in Feb. 2020
- Completed 18 months of mandatory military service (Mar. 2020 – Sep. 2021)

RESEARCH EXPERIENCE

Aug. 2026 – Present **Robust Text-to-Image Person Re-Identification for Real-World Search**
Institute: KIST (Seoul, Republic of Korea)
- Investigating text-based person retrieval for missing-person and suspect searches where reference images are unavailable and only natural-language descriptions may be provided

Apr. 2026 – Jun. 2026 **Multimodal Human Proficiency Estimation (SkillLens) [1]**
Institute: KIST (Seoul, Republic of Korea)
- Contributed core ideas and experimental design for action-guided Prototype Dynamics Margin (PDM) and CORAL-based ordinal calibration
- The proposed framework achieved 54.2% accuracy on Ego-Exo4D, outperforming the strongest evaluated prior baseline (50.1%) by 4.1 percentage points

Mar. 2026 – Present **Federated Domain Generalization for Person Re-Identification**
Institute: KIST (Seoul, Republic of Korea)
- Investigated cross-domain generalization conflicts in federated person re-identification, motivated by scaling a deployed missing-person search system across heterogeneous municipal surveillance environments
- Developed identity-ranking-based diagnostics and evaluated the effects of client updates on unseen-domain retrieval through leave-one-client-out experiments

Dec. 2025 – Mar. 2026 **Pose-Robust Representation Learning for Person Re-Identification**
Institute: KIST (Seoul, Republic of Korea)
- Designed and implemented *SwapMixer*, a generation-free feature-level augmentation method that combines identity representations with pose embeddings from different identities

Aug. 2024 – Dec. 2024 **Knowledge Distillation for Open-Vocabulary Object Detection**
Institute: Yonsei University (Seoul, Republic of Korea)

- Analyzed BARON's contrastive learning framework and identified a mismatch between teacher and student similarity structures for bags of regions sampled around the same region proposal
- Applied similarity-preserving knowledge distillation to align teacher–student relational representations, improving novel-class box AP50 on COCO by 1.2 points (23.1 to 24.3)

PUBLICATIONS

[1] D. Ahn, **H. Kim**, J.-H. Han, B. Ham, H. Choi, I.-J. Kim, and H. Kim. Look Closer: Action-Guided Dense Visual Dynamics for Proficiency Estimation. *CVPR 2026 Workshop on MOMA*, 2026, Denver, USA (**Oral**). arXiv · Project page

SELECTED COURSE PROJECTS

Self-Supervised Visual Representation Learning (SwAV)

- Implemented a ResNet-18-based SwAV model and evaluated the effects of data augmentation and labeled-data availability on downstream CIFAR-100 classification.

AWARDS

Nov. 2024	Most Popular Award (3rd place), EE-Festival, Yonsei University
Feb. 2024	Honors (top 10% of College of Engineering, by semester GPA; 4.18/4.30), Yonsei University, Fall 2023
Jul. 2023	Outstanding Team, Study Group Program (Signals and Systems, Spring 2023), Yonsei University
Feb. 2023	Honor Student (semester academic honor; GPA 3.81/4.00), Inha University, Fall 2022
Aug. 2022	Honor Student (semester academic honor; GPA 4.00/4.00), Inha University, Spring 2022
Aug. 2019	Honor Student (semester academic honor; GPA 3.72/4.00), Inha University, Spring 2019

SCHOLARSHIPS

Mar. 2026	Yonsei–KIST Convergence Research Program Scholarship (**Full tuition**), Yonsei University
Sep. 2025	Yonsei–KIST Convergence Research Program Scholarship (**Full tuition**), Yonsei University
Sep. 2025	Graduate Student Research Assistantship (GSRA), Yonsei University
Sep. 2024	Truth Scholarship (merit-based), Yonsei University
Mar. 2024	Truth Scholarship (merit-based), Yonsei University
Sep. 2019	Excellence Scholarship (merit-based), Inha University

NOTABLE ACTIVITIES

- **Front-end Developer**, AIID (CCTV surveillance monitoring system), KIST (Mar. 2026 – Present) – Designed and built the operator monitoring UI
- **Indoor Person ReID Evaluation Data Collection**, KIST (Sep. 2026) – Designed indoor person ReID evaluation scenarios, installed cameras, and recorded laboratory participants to support subsequent model validation
- **Volunteer Teacher**, Preschool Sunday School, Come & See (Feb. 2023 – Present) – Weekly classes for children aged 4–6
- **Participant**, LG Aimers AI Hackathon, LG AI Research (Jan. 2024 – Feb. 2024) – Built a B2B lead-conversion prediction model from MQL data
- **Participant**, Winter DX Coding Camp (AI Challenge, Deep Learning Track), Yonsei University (Jan. 2024 – Feb. 2024)
- **President**, Moment (Basketball Club), Inha University (Aug. 2019 – Feb. 2020) – Led 43 members, managed club operations and intercollegiate events; won the university club basketball tournament
- **Ammunition Specialist**, Republic of Korea Army (Mar. 2020 – Sep. 2021)

TECHNICAL SKILLS

Programming & Tools	Python, C/C++, Bash, Git, Linux
Deep Learning & VLMs	PyTorch, CLIP, Qwen3-VL
Generative Models	Qwen-Image-Edit (2509/2511), AnyPose LoRA, Multiple-Angles LoRA
AI-Assisted Coding	Claude Code