Yunghee Lee

Location: Daejeon, Republic of Korea | **Email:** yhlee.add@gmail.com | **Website:** yhl.ee
Google Scholar: scholar.google.com/citations?user=yfWLZ_0AAAAJ | **GitHub:** github.com/yhlee-add

Education

Korea Advanced Institute of Science and Technology (KAIST) Mar 2020 – Feb 2024
- B.S. in Computing with a minor in Physics, *summa cum laude*, GPA: 4.17/4.3 Daejeon, Republic of Korea

Publications

P: Preprint, C: Conference, W: Workshop, J: Journal

[P1] **What Does Fréchet Distance Measure? A Directional Decomposition**
Yunghee Lee, Jaeyeon Kim
Under review at International Conference on Learning Representations (**ICLR**), 2027 [paper] [code]

[W3] **Rethinking FID Through the Geometry of the Reference Dataset**
Yunghee Lee, Byeonghyun Pak
ICML Workshop on Combining Theory and Benchmarks (**CTB**), 2026 [paper]

[W2] **Pixel-level Scene Understanding in One Token: Visual States Need What-is-Where Composition**
Seokmin Lee, ***Yunghee Lee***, Byeonghyun Pak, Byeongju Woo
CVPR Workshop on Pixel-level Video Understanding in the Wild (**PVUW**), 2026 [paper] [page]

[C1] **Tortoise and Hare Guidance: Accelerating Diffusion Model Inference with Multirate Integration**
Yunghee Lee, Byeonghyun Pak, Junwha Hong, Hoseong Kim
Neural Information Processing Systems (**NeurIPS**), 2025 [paper] [page]

[W1] **LVS: A Learned Video Storage for Fast and Efficient Video Understanding**
Yunghee Lee, Jongse Park
CVPR Workshop on Efficient Deep Learning for Computer Vision (**ECV**), 2024 [paper] [talk]

[J1] **HybGrasp: A Hybrid Learning-to-Adapt Architecture for Efficient Robot Grasping**
Jungwook Mun, Khang Truong Giang, ***Yunghee Lee***, Nayoung Oh, Sejoon Huh, Min Kim, Sungho Jo
IEEE Robotics and Automation Letters (**RA-L**), 2023 [paper]

Works in Progress

Caching is Multirating: Your Diffusion Caching Method is Secretly a Multirate Method
In preparation for Transactions on Machine Learning Research (**TMLR**)

Experience

Independent Research Jul 2026 – Present
Research Collaboration with Harvard University (with Jaeyeon Kim) Remote
- Project: Directional Decomposition of the Fréchet Distance
  - Decomposed the Fréchet distance **exactly over interpretable feature directions**
  - Located **two-thirds of COCO FID increase** along one direction; case studies on FID, FVD, Protein FID
  - 1 Paper under review at ICLR 2027 [P1]

Agency for Defense Development (ADD) Jun 2024 – Present
Research Officer (First Lieutenant, Republic of Korea Army) Daejeon, Republic of Korea

- Selected as one of 20 research officers nationwide for STEM-based national defense research
- Project: Synthetic Dataset Generation for Air Defense Systems
  - Constructed synthetic datasets for rare/low-visibility targets via **image/video diffusion models**
  - Accelerated the generation pipeline by ≈**30%** with a novel **multirate integration** method (THG)
  - First-author publication in NeurIPS 2025 [C1]
  - Found **FID and ImageReward disagreeing** while evaluating THG, motivating [W3] and [P1]
- Project: Data Collection and Retrieval Software for Surveillance UAVs
  - Replaced a leaking C++ collector that halted flights after ≈20 min with a Python **asyncio** service
  - Enabled **full-battery flights** and web-based inspection of recorded data

Computer Architecture and Systems Lab @ KAIST Jan 2023 – Mar 2024
Undergraduate Research Intern (advisor: Prof. Jongse Park) Daejeon, Republic of Korea

- Project: Learned Video Storage for Video Understanding
  - Developed video storage systems that can **serve ML-based video features efficiently** [W1]
  - Built a feature fusion network and a cost model to **reconstruct features from subfeatures**

Neuro-Machine Augmented Intelligence Lab @ KAIST Jan 2022 – Aug 2022
Undergraduate Research Intern (advisor: Prof. Sungho Jo) Daejeon, Republic of Korea

- Project: Robot Grasping for Various Gripper Designs
  - Developed robotic arm control algorithms that can **adapt to different gripper designs** [J1]
  - Accelerated training data generation pipelines with multiprocessor and GPU parallelism

Teaching Experience

KAIST SW Academy Jungle & KRAFTON Jungle Oct 2022 – Mar 2024
Teaching Assistant Daejeon, Republic of Korea

- Mentored students through the `pintos-kaist` operating system project [link]
- Modernized the project codebase by fixing compatibility issues

Honors & Awards

Chief of Naval Operations Award Nov 2024
Republic of Korea Navy

- Third place in the Military AI Contest (MAICON)

Korea National Scholarship of Excellence in Science and Technology Mar 2020 – Feb 2024
Ministry of Science and ICT, Republic of Korea

- Full-ride national scholarship awarded to top students in science and engineering

Minister of Science and ICT Award Dec 2022
Ministry of Science and ICT, Republic of Korea

- First place in the miliTECH Challenge

Academic Services

Conference Reviewer: International Conference on Learning Representations (**ICLR**), 2027