DongGeon (Lloyd) Kwak

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RESEARCH INTERESTS

Generalist robot learning, cross-embodiment learning, lifelong robot learning (adaptation, failure detection and recovery), and long-horizon manipulation with task and motion planning.

EDUCATION

Seoul National University of Science and Technology (SeoulTech) Seoul, Korea
B.E. in Computer Science and Engineering; Minor in Applied Artificial Intelligence *Feb. 2022 – Aug. 2027 (expected)*

- GPA 4.13/4.50 (8th of 114 in major).
- A+ in Linear Algebra, Discrete Mathematics, Machine Learning, Computer Vision, Data Analysis, Operating Systems; also completed Probability and Random Variables, Reinforcement Learning.

RESEARCH EXPERIENCE

Robot Learning Research: FAVOR Seoul, Korea
Research feedback: Prof. Ji-Hyeong Han; weekly lab meetings *Jul. 2025 – Present*

- **FAVOR** (first-author manuscript in preparation): training-free correction of a pretrained diffusion policy when a joint of the robot arm locks or loses range.
- Compared seven corrections applied at three stages of inference over 112 simulated fault conditions with paired seeds. Retargeting the intended end-effector motion position-first raised mean success from 0.37 to 0.60 (0.11 to 0.48 with a locked joint).
- Showed that the end-effector error left after correction predicts which faults are recoverable (AUC 0.94); now validating on a real xArm7.

MTREA: Multi-Task Retentive Embodiment Adaptation SeoulTech
Capstone Design project, two-person team *Sep. 2026 – Present*

- Studying whether fine-tuning the $\pi_{0.5}$ VLA on a low-cost SO-101 arm degrades its performance on held-out tasks; co-designed the protocol (naive fine-tuning baseline, four held-out task families, per-task oracle).
- Built calibration and teleoperation for data collection, remote GPU training, and asynchronous policy serving on the real arm.

MANUSCRIPTS AND PATENTS

M1 **D. Kwak**. "FAVOR: Fault-Aware Visuomotor Policy Adaptation via Ordered Retargeting." *Manuscript in preparation*, 2026. [code]

P1 K. Lee, G. Lee, **D. Kwak**. "Real-time crack detection system for construction sites." Korean Patent 10-2647135, registered Mar. 12, 2024 (filed Oct. 31, 2022).

SELECTED PROJECTS

MakeYourBrick: One Photo to a Buildable LEGO Model May 2026
SeoulTech ST Startup Club Support Program, team PixBricks

- Web app that reconstructs an object from a single photo (SAM2, SAM 3D Objects) and converts it into a buildable LEGO model; handled color mapping and shadow artifacts.

RL-Arena: Competitive Reinforcement-Learning Platform Nov. – Dec. 2025
Open Source Software course; two-person team; selected as an outstanding project

- Platform for submitting RL agents and ranking them by ELO. I built the environment package (published on PyPI), the match executor, and most of the backend.

Frequency-Aware Preprocessing for Diffusion Image Detection Dec. 2025
Team project, two people

- Found that diffusion-generated images have a narrower pixel-intensity spread and built preprocessing around it; ResNet-50 test accuracy rose from 72.6% to 96.3% on 115k images.

Logisim MLP: A Neural Network Built from Logic Gates Spring 2025
Digital Logic and Systems course; selected as an outstanding project

- A 256-128-10 MNIST classifier implemented as a digital logic circuit, with trained weights stored in ROM.

WORK EXPERIENCE

CHASER, Software Developer — Nov. 2022 – Jan. 2023
Laver, Software Developer — Jun. 2022 – Oct. 2022

- Developed an object-detection system from model to product integration, backend APIs, and an IFC-to-XML converter for building models.

HONORS

Outstanding term project selections: Digital Logic and Systems, Open Source Software, Computer Vision — 2025 – 2026

SeoulTech ST Startup Club Support Program, team PixBricks — 2026

SKILLS

Programming	Python, C++
Robot learning	PyTorch, LeRobot, MuJoCo, LIBERO
Tools	Docker, Git, Linux
Languages	Korean (native); English (TOEIC Speaking, Level AL)
Certification	Craftsman Programming, HRD Korea (2023)