Yongjun **Cho**

AI RESEARCHER

✉ cyjun0304@kaist.ac.kr | 🏠 yongjuncho.com | 🐙 PurpleSand123 | 💼 purplesand

*"Together, researching **AI** to be humanity's **companion**."*

Summary

Senior Research Scientist specializing in **Embodied AI** and **Robot Learning**. My research aims to achieve **robust generalization** in robotics by integrating **Vision-Language-Action (VLA) models** with **large-scale physical interaction data**. Currently, I am bridging the gap between research and real-world deployment by developing **commonsense-aware navigation systems**, while actively expanding these generalizable methodologies to robotic manipulation. My work addresses fundamental challenges in robot learning, including **Sim-to-Real transfer** and **data efficiency**. Furthermore, I am dedicated to accelerating robot learning by releasing **open-source benchmarks** and datasets, and fostering a **research ecosystem** that is accessible across diverse robotic hardware.

Keywords: Embodied AI, Robot Learning, Vision-Language Models, Imitation Learning, Sim-to-Real Transfer.

Experience

Maum AI   *Seongnam, S.Korea*

SENIOR RESEARCH SCIENTIST   *Nov 2024 - Present*

- Established a commercial pipeline for **VLA navigation models** (1B–7B), optimizing large-scale training and inference efficiency.
- Enhanced **Sim-to-Real** transfer and policy performance via domain randomization and efficient **human intervention** pipelines.
- Led **open-source initiatives** by releasing benchmarks, datasets, and simulation tools to accelerate research in robot learning.

RESEARCH SCIENTIST   *May 2024 - Oct 2024*

- Led the ideation and fundamental research for commonsense-aware navigation systems **CANVAS** 🔗.
- Designed comprehensive evaluation protocols spanning **Nvidia Isaac Sim** and real-world environments.
- Developed the foundational pipeline for large-scale **data collection**, and model training.

Deargen Inc.   *Seoul, S.Korea*

MACHINE LEARNING RESEARCHER   *April. 2022 - April. 2024*

- Developed the overall Drug Target Interaction (DTI) model architecture and conducted data crawling and processing.
- Created a fine-tuning framework and provided services to an **international big pharma corporation**.
- Developed a **reinforcement learning** model to enhance pocket-conditioned **3D molecule generation model** 🔗

Education

KAIST (Korea Advanced Institute of Science and Technology)   *Daejeon, S.Korea*

M.S. IN SCHOOL OF ELECTRICAL ENGINEERING   *Mar. 2020 - Mar. 2022*

- Advisor: **Dong Eui Chang** 🔗
- Developed **autonomous guidewire navigation** 🔗 systems using **Reinforcement Learning** and **Sim-to-Real** transfer.
- Led multiple **autonomous drone** projects, including **vision-only navigation** and custom radio control systems. Conducted R&D with **HD Korea Shipbuilding** to develop ship assistance drones featuring **relative path planning** and AI-driven perception.
- Investigated real-time **anomaly detection** 🔗 for quadrotor actuators using multivariate statistical analysis.
- Awarded the **Grand Prize** in the **Autonomous Drone Competition** hosted by the **Defense Acquisition Program Administration (DAPA)**.

KAIST (Korea Advanced Institute of Science and Technology)   *Daejeon, S.Korea*

B.S. IN DEPARTMENT OF MECHANICAL ENGINEERING   *Mar. 2015 - Mar. 2020*

- Development of an Autonomous Driving Robot for Library Inventory Management as a Graduation Project

[🎓] **Pap**ers ───

† denotes equal contribution, * denotes corresponding author

[1] CANVAS: Commonsense-Aware Navigation System for Intuitive Human-Robot Interaction ⸜

INTERNATIONAL CONFERENCE ON ROBOTICS AND AUTOMATION (ICRA) 2025

*Suhwan Choi[†], **Yongjun Cho**[†], Minchan Kim[†], Jaeyoon Jung[†], Myunchul Joe, Yubeen Park, Minseo Kim, Sungwoong Kim, Sungjae Lee, Hwiseong Park, Jiwan Chung, Youngjae Yu[*]*

- Proposed the CANVAS framework, which integrates visual and linguistic instructions for commonsense-aware robot navigation. It leverages imitation learning to interpret abstract and noisy human guidance.
- Introduced the COMMAND dataset and demonstrated that CANVAS significantly outperforms traditional systems like ROS NavStack across both simulated and real-world environments.
- Also received the Outstanding Paper Award at the NeurIPS 2024 OWA Workshop (3 selected out of 100 accepted papers).

[2] D2E: Scaling Vision-Action Pretraining on Desktop Data for Transfer to Embodied AI ⸜

UNDER REVIEW

*Suhwan Choi[†], Jaeyoon Jung[†], Haebin Seong[†], Minchan Kim, Minyeong Kim, **Yongjun Cho**, Yoonshik Kim, Yubeen Park, Youngjae Yu[*], Yunsung Lee[*]*

- Proposed the D2E (Desktop to Embodied AI) framework, which leverages scalable desktop and gaming data to pretrain agents for physical robotics tasks, bypassing costly physical data collection.
- Using 1.3K+ hours of human and pseudo-labeled data, achieved 96.6% success on the LIBERO manipulation benchmark and 83.3% on the CANVAS navigation benchmark, validating the transfer from digital to physical domains.
- Committed to publicly releasing the OWA toolkit, all datasets, and the VAPT-trained models to advance research in embodied AI.

[3] Fine-tuning Pocket-conditioned 3D Molecule Generation via Reinforcement Learning ⸜

ICLR 2024 WORKSHOP ON GENERATIVE AND EXPERIMENTAL PERSPECTIVES FOR BIOMOLECULAR DESIGN (GEM)

*Daeseok Lee[†], **Yongjun Cho**[†]*

- Enhanced the 3D molecule generation model using reinforcement learning.
- Our methods are designed to broadly apply to similar models in computational drug design.

[4] Sim-to-Real Transfer of Image-Based Autonomous Guidewire Navigation Trained by Deep Deterministic Policy Gradient with Behavior Cloning for Fast Learning ⸜

2022 IEEE/RSJ INTERNATIONAL CONFERENCE ON INTELLIGENT ROBOTS AND SYSTEMS (IROS)

***Yongjun Cho**[†], Jae-Hyeon Park[†], Jaesoon Choi, Dong Eui Chang[*]*

- Applied reinforcement learning to move a guidewire to its destination.
- Accelerated learning through behavior cloning in simulations.
- Constructed a real-world testbed and applied deep neural networks to real-world scenarios.

[5] Image Processing Based Autonomous Guidewire Navigation in Percutaneous Coronary Intervention ⸜

2021 IEEE INTERNATIONAL CONFERENCE ON CONSUMER ELECTRONICS-ASIA (ICCE-ASIA)

***Yongjun Cho**, Jae-Hyeon Park, Jaesoon Choi, Dong Eui Chang[*]*

- Developed an algorithm to move a guidewire to its destination in a constrained environment using only image inputs.

[6] Real-time Quadrotor Actuator Fault Detection and Isolation Using Multivariate Statistical Analysis Techniques with Sensor Measurements ⸜

2020 20TH INTERNATIONAL CONFERENCE ON CONTROL, AUTOMATION AND SYSTEMS (ICCAS)

*Jae-Hyeon Park, **Yongjun Cho**, Jin-Yeong Jeong, Dong Eui Chang[*]*

- Utilized anomaly detection techniques to detect drone motor faults using sensor data.
- Built the experimental environment and performed data measurements.

Honors & Awards ─────────────────────────────────────

INTERNATIONAL

| 2024 | **Outstanding Paper Awards**, NeurIPS 2024 Workshop Open-World Agents (3 selected out of 100) | *Vancouver, Canada* |

DOMESTIC

| 2020 | **Grand Prize**, Autonomous Drone Competition hosted by the Defense Acquisition Program Administration | *Daejeon, S.Korea* |

SCHOLARSHIP

| 2015 – 2018 | **National Excellence Scholarship (Natural Sciences and Engineering)**, Covers admission fee, full tuition, and additional support for study grant and living expenses | *Korea Student Aid Foundation (KOSAF)* |

Academic Services

| 2025 | **Conference Reviewer**, 2025 IEEE International Conference on Robotics & Automation (ICRA) | *USA* |
| 2025 | **Journal Reviewer**, IEEE Robotics and Automation Letters (RA-L) | *USA* |

Extracurricular Activity

AttentionX: AI Research & Startup Group *Seoul*

TEAM MEMBER *Jan. 2024 - Dec. 2024*

- Conducted comprehensive analysis on 3D and 4D generative models, exploring their applications.
- Researched tuning-free high-resolution image editing techniques utilizing pretrained diffusion models.

NUS (National University of Singapore) *Singapore*

EXCHANGE STUDENT *Jan. 2018 - May. 2018*

- Adapted to a multicultural academic environment and improved cross-cultural communication skills.
- Completed courses in mechanical engineering, environmental science, and Chinese language as part of the exchange program.

Certifications

| 2025 | **NVIDIA Isaac for Accelerated Robotics**, Instructor Led Workshop, Nvidia Deep Learning Institute |
| 2025 | **Generative AI with Diffusion Models**, Self-paced Course, Nvidia Deep Learning Institute |

Skills

ML Framework	Pytorch, Lightning, Ray, Nvidia Isaac
Programming	Python, Docker, ROS, OpenCV, Java, Android, C++, LaTeX, MySQL, FastAPI, Next.js
Languages	Korean (native), English (fluent; TOEFL iBT 106)