# Yongjun Cho

AI Researcher

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*"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 democratizing robot learning by releasing **open-source** benchmarks and datasets, fostering an inclusive **ecosystem** adaptable to 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 democratize 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

## [🎓] Papers

† 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)