

# Yongjun Cho

MACHINE LEARNING RESEARCHER

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

## Summary

A Senior Research Scientist at Maum AI, I have **3 years and 7 months of experience** in the **AI startup industry**. I completed a **2-year master's program** at the School of Electrical Engineering of **KAIST**, specializing in Artificial Intelligence and Reinforcement Learning.

My research focuses on achieving **generalization performance** in robotics and AI by leveraging **imitation learning, reinforcement learning, and vision-language models**. I believe that **large-scale physical interaction data** is crucial to solving this challenge, ultimately aiming to **make AI a companion to humans** through an '**open-source Physical AI ecosystem**' that learns physical laws and gathers extensive object interaction data to overcome both **generalization** and **hardware limitations**.

I'm a **Senior AI Researcher** on the WoRV (World model for Robotics and Vehicle control) team at MaumAI, where I focus on developing a **general-purpose vision-language-action (VLA) model** for **autonomous navigation**. My work involves integrating **multimodal inputs** like text, images, and actions to enable **intuitive, commonsense-aware instruction following** in real-world environments. I earned my master's degree in Electrical Engineering from KAIST, specializing in **autonomous control** and **reinforcement learning**.

## Experience

### Maum AI.

Seongnam, S.Korea

SENIOR RESEARCH SCIENTIST

Nov 2024 - Present

- Leveraged 12 H100 nodes and 400 hours of human expert data for training, and led its application to an orchard pesticide spraying robot for commercialization.
- Conducted research to improve Sim2Real performance and developed the data pipeline and inference infrastructure necessary for actual commercialization.
- Developed a pipeline for collecting human intervention data, achieving **97% evaluation performance**.

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May 2024 - Oct 2024

- Initiated research and laid the fundamental conceptual framework for a **general-purpose foundation model** in robotics and autonomous driving.
- Designed and implemented evaluation tasks within **Nvidia Isaac** simulation environments, which were subsequently validated through real-world application.
- Developed and optimized the entire pipeline for large-scale data collection, efficient model training, and comprehensive evaluation.

### 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 ELECTRICAL ENGINEERING

Mar. 2020 – Mar. 2022

- Advisor: **Dong Eui Chang**
- Conducted research on reinforcement learning and autonomous driving for drones in the **Control Lab**
- Achieved **A+** in **Deep Learning**, demonstrating strong proficiency in modern AI algorithms and frameworks

### 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
- Achieved top grades in programming-related courses: **Introduction to Programming (A+)**, **Data Structures (A+)**, and **Programming for Signal and Image Processing (A0)**
- Excelled in foundational engineering subjects such as Solid Mechanics (A0), Dynamics (A+), Thermodynamics (A+), and Fluid Mechanics (A-)

<sup>†</sup> denotes equal contribution

<sup>\*</sup> denotes corresponding author

## CANVAS: Commonsense-Aware Navigation System for Intuitive Human-Robot Interaction

*First Author (equal contribution)*

Suhwan Choi<sup>†</sup>, Yongjun Cho<sup>†</sup>, Youngjae Yu<sup>\*</sup> et al.

INTERNATIONAL CONFERENCE ON ROBOTICS AND AUTOMATION (ICRA) 2025

2024-2025

- 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.
- Earlier version presented at **NeurIPS 2024 Workshop (OWA)**, received **Outstanding Paper Award** and oral presentation (3 selected out of hundreds).

## D2E: Scaling Vision-Action Pretraining on Desktop Data for Transfer to Embodied AI

*Sixth Author*

Suhwan Choi<sup>†</sup>, Jaeyoon Jung<sup>†</sup>, Haebin Seong<sup>†</sup>, Minchan Kim, Minyeong Kim, Yongjun Cho, Youngjae Yu<sup>\*</sup>, Yunsung Lee<sup>\*</sup> et al.

SUBMITTED TO ICLR 2026

2025

- 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.

## Fine-tuning Pocket-conditioned 3D Molecule Generation via Reinforcement Learning

*First Author (equal contribution)*

Daeseok Lee<sup>†</sup>, Yongjun Cho<sup>†</sup>

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

2024

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

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

*First Author (equal contribution)*

Yongjun Cho<sup>†</sup>, Jae-Hyeon Park<sup>†</sup>, Dong Eui Chang<sup>\*</sup> et al.

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

2022

- 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.

## Image Processing Based Autonomous Guidewire Navigation in Percutaneous Coronary Intervention

*First Author*

Yongjun Cho, Dong Eui Chang<sup>\*</sup> et al.

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

2021

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

## Real-time Quadrotor Actuator Fault Detection and Isolation Using Multivariate Statistical Analysis Techniques with Sensor Measurements

*Second Author*

Jae-Hyeon Park, Yongjun Cho, Dong Eui Chang<sup>\*</sup> et al.

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

2020

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

# Extracurricular Activity

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## AttentionX: AI Research & Startup Group

TEAM MEMBER

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

Seoul

Jan. 2024 - Dec. 2024

## NUS (National University of Singapore)

Singapore

EXCHANGE STUDENT

- 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.

Jan. 2018 - May. 2018

# Honors & Awards

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## INTERNATIONAL

2024 **Outstanding Paper Awards**, NeurIPS 2024 Workshop Open-World Agents Vancouver, Canada

## DOMESTIC

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

## SCHOLARSHIP

2015 – **National Excellence Scholarship (Natural Sciences and Engineering)**, Covers admission fee, full tuition, Korea Student Aid

2018 and additional support for study grant and living expenses Foundation (KOSAF)

# Certifications

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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

# Program Committees

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2025 **Conference Reviewer**, 2025 IEEE International Conference on Robotics & Automation (ICRA) USA

2025 **Journal Reviewer**, IEEE Robotics and Automation Letters (RA-L) USA

# Skills

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**ML Framework** Pytorch, Lightning, Ray

**Programming** Python, Docker, ROS, Git, OpenCV, Java, C++, LaTeX, MySQL, FastAPI

**Languages** Korean (native), English (fluent; TOEFL iBT 106)