Sol Choi

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RESEARCH INTERESTS

Humanoid, Manipulation, Robot Control & Learning, Loco-Manipulation, p-HRI (physical Human-Robot Interaction)

EDUCATION

Yonsei University, Seoul, South Korea — March 2024 — Present
Master of Science in School of Mechanical Engineering

Seoul National University of Science and Technology, Seoul, South Korea — March 2020 — February 2024
Bachelor of Science in Department of Mechanical System Design Engineering

ACADEMIC EXPERIENCE

Advanced Robot Control Lab. (ARC) — Seoul, South Korea
Graduate Researcher — March 2024 — Present
(Humanoid, Manipulator, Robot Learning, Loco-Manipulation, Robot Control, Sim-to-Real)

- Sim-to-Sim Transfer Between MuJoCo and IsaacLab for Bridging the Sim-to-Real Gap
- Advanced Humanoid Locomotion Strategy using Reinforcement Learning
- Subspace-wise Hybrid RL for Articulated Object Manipulation

Machine Learning and Control Systems Lab. (MLCS) — Seoul, South Korea
Graduate Researcher — March 2024 — Present
(Robot Learning, Mobile Robotics, Manipulation, Robot Control)

- (Upcoming)

Mobile Robotics Lab. (MRL) — Seoul, South Korea
Undergraduate Researcher — January 2022 — February 2024
(Aerial Manipulator, Robust Control, Compliance Control, p-HRI)

- Development of Aerial Manipulator System for Object Manipulation
- Teleoperation of Haptic Manipulator Using Force Feedback Algorithm
- Development of Manipulator Control and Path Planning for an Automated Battery Exchange System

PROJECTS

Subspace-wise Hybrid RL for Fully Autonomous Articulated Object Manipulation — Seoul, South Korea
Hybrid Control, RL Researcher — March 2024 — Present

- Proposing the Subspace-wise Hybrid Reinforcement Learning (SwRL) framework.
- Utilizing the redundant subspace to enhance robotic dexterity.
- Employing reinforcement learning for adaptive force control and natural motion generation.
- Fully autonomous task execution using vision-based 6D pose estimation and autonomous navigation.

PUBLICATIONS

Conference Paper
Published

- Choi, S., Seo, S., Jung, S., & Lee, S. (2023). Manipulator system based on compliance control for object manipulation. *Proceedings of the Korean Institute of Control, Robotics, and Systems Conference*, 587-588.

Miscellaneous (ArXiv Preprint)
In-Progress

- Kim, Y., Choi, S., You, B., Jang, K., & Lee, Y. (2024). Subspace-wise hybrid RL for articulated object manipulation. *arXiv preprint arXiv:2412.08522*. `https://arxiv.org/abs/2412.08522`

AWARDS

RL-based Robust Walking Control for Human-like Humanoid Robots to Overcome Unstructured Environments Seoul, South Korea December 2024
Excellent Poster Award, KIST AIR Best Paper Award

Development of Aerial Manipulator System for Object Manipulation Seoul, South Korea February 2024
Capstone Design Best Achievement Award, ST LINC 3.0 Fair

Development of Aerial Manipulator System for Object Manipulation Seoul, South Korea November 2023
Capstone Design Best Graduation Project Award, Seoul National University of Science and Technology

Manipulator System Based on Compliance Control For Object Manipulation Samcheok, South Korea June 2023
Undergraduate Best Paper Award, Institute of Control, Robotics and Systems

REFERENCES

Dr. Yisoo Lee
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Scholar Profiles: Advanced Robot Control Lab. (ARC) — Google Scholar

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Scholar Profiles: Machine Learning and Control Systems Lab. (MLCS) — Google Scholar

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Scholar Profiles: Mobile Robotics Lab. (MRL) — Google Scholar