

Junwoo Chang

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RESEARCH INTERESTS

Reinforcement Learning, Geometric Deep Learning, Robotic Manipulation and Locomotion, Diffusion Models

EDUCATION

2024 - present Master's Degree at **Yonsei University** (Advisor: Prof. Jongeun Choi)
2018 - 2024 Bachelor's Degree at **Yonsei University**
2-year absence for military service (Jul. 2019 – Jan. 2021)

PUBLICATIONS

(*: equal contribution, †: equal advising)

- **Junwoo Chang**, Minwoo Park, Joohwan Seo, Roberto Horowitz, Jongmin Lee[†], Jongeun Choi[†]
[Partially Equivariant Reinforcement Learning in Symmetry-Breaking Environments](#)
International Conference on Learning Representations (ICLR), 2026
- **Junwoo Chang**, Joseph Park, Roberto Horowitz, Jongmin Lee[†], Jongeun Choi[†]
[Group-Invariant Unsupervised Skill Discovery: Symmetry-aware Skill Representations for Generalizable Behavior](#)
Preprint (under review)
- Jebeom Chae*, **Junwoo Chang***, Seungho Yeom, Yujin Kim, Jongeun Choi
[Multi-Robot Motion Planning from Vision and Language using Heat-Inspired Diffusion](#)
Preprint (under review)
- Minwoo Park*, **Junwoo Chang***, Jongeun Choi, Roberto Horowitz
[Symmetry-Aware Steering of Equivariant Diffusion Policies: Benefits and Limits](#)
Preprint (under review)
- Joohwan Seo, Soochul Yoo, **Junwoo Chang**, Hyunseok An, Hyunwoo Ryu, Soomi Lee, Arvind Kruthiventy, Jongeun Choi, Roberto Horowitz
[SE\(3\)-Equivariant Robot Learning and Control: A Tutorial Survey](#)
International Journal of Control, Automation and Systems (IJCAS), 2025
- Hyunwoo Ryu, Jiwoo Kim, Hyunseok An, **Junwoo Chang**, Joohwan Seo, Taehan Kim, Yubin Kim, Chaewon Hwang, Jongeun Choi, Roberto Horowitz
[Diffusion-EDFs: Bi-equivariant Denoising Generative Modeling on SE\(3\) for Visual Robotic Manipulation](#)
Computer Vision and Pattern Recognition (CVPR), 2024 (Highlight)
- **Junwoo Chang***, Hyunwoo Ryu*, Jiwoo Kim, Soochul Yoo, Joohwan Seo, Nikhil Potu Surya Prakash, Jongeun Choi, Roberto Horowitz
[Denoising Heat-inspired Diffusion with Insulators for Collision Free Motion Planning](#)
NeurIPS 2023 Workshop on Diffusion Models

AWARDS AND SCHOLARSHIPS

Best Technical Presentation Award	Oct. 2023
The 5th Yonsei University Mechanical Engineering Graduate Student Academic Conference	
Yonsei Jinri Scholarship	Dec. 2021, Jul. 2022, Dec. 2022
Recognized for sustained academic excellence (three consecutive awards)	

RESEARCH EXPERIENCE

Machine Learning and Control Systems Laboratory , Yonsei University <i>Graduate Researcher, Advisor: Prof. Jongeun Choi</i>	Mar. 2024 – Present
– Research on group equivariant and diffusion-based robot learning	
– Developing partially equivariant reinforcement learning methods for symmetry-breaking tasks	
Machine Learning and Control Systems Laboratory , Yonsei University <i>Undergraduate Research Intern, Advisor: Prof. Jongeun Choi</i>	Sep. 2022 – Feb. 2024
– Hyundai Motor Project: Self-supervised representation learning for autonomous driving	
– Integrated heat-transfer dynamics with diffusion models for vision-based navigation	
– Undergraduate Thesis: <i>Imaginary Experience Replay: Generating Redundant Transitions for Sparse and Negative Rewards</i>	

Human-Centered AI Robotics Laboratory , Yonsei University <i>Undergraduate Research Intern, Advisor: Prof. Dongjun Shin</i>	Jun. 2022 – Sep. 2022
– Designed a 5-DOF snake robot for in-pipe locomotion and haptic teleoperation	

PROJECT EXPERIENCE

Technical Demonstration of Diffusion-EDFs	Aug. 2023 – Oct. 2023
– Demonstrated real-world robotic manipulation using the Diffusion-EDFs	
– Awarded Best Technical Demonstration (top project at conference)	
Volunteer Research, Yonsei Rehabilitation Hospital	Jun. 2022 – Jan. 2023

TEACHING

Teaching Assistant <i>Mechanical Engineering Laboratory II (Yonsei MEU3005-01), Prof. Jongeun Choi</i>	Spring 2024
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ACADEMIC SERVICE

- Reviewer, European Conference on Computer Vision (ECCV) 2026
- Reviewer, IEEE International Conference on Robotics and Automation (ICRA) 2026
- Reviewer, IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2026
- Reviewer, IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM) 2024

MILITARY SERVICE

Republic of Korea Army, K-SAM Pegasus Air Defense System Operator

Jul. 2019 – Jan. 2021

SKILLS

Programming C, C++, Python (PyTorch, JAX, TensorFlow), MATLAB, ROS

Hardware Franka Emika, Kinova Gen2, RB-Y1, TurtleBot3, OptiTrack, Arduino, Raspberry Pi

Tools MoveIt, Git, Linux, LaTeX

Theory Reinforcement Learning, Representation Theory, Group Theory, Diffusion Models