

JIWOO KIM

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Seoul, Republic of Korea

RESEARCH INTERESTS

Robotics; Machine Learning; Reinforcement Learning

EDUCATION

Yonsei University, B.S.

Major in Electrical and Electronic Engineering

Mar.2021 - Present

Seoul, Republic of Korea

PUBLICATIONS

[1] Hyunwoo Ryu, Jiwoo Kim, Junwoo Chang, Hyun S. Ahn, Joohwan Seo, Taehan Kim, Yubin Kim, Jongeun Choi, and Roberto Horowitz. **"Diffusion-EDFs: Bi-equivariant Denoising Generative Modeling on SE(3) for Visual Robotic Manipulation"**, ArXiv, (2023)

[2] Jiwoo Kim*, Hyunwoo Ryu*, Jongeun Choi, Joohwan Seo, Nikhil Prakahs, Ruolin Li, Roberto Horowitz (* Equal Contribution). **"Robotic Manipulation Learning with Equivariant Descriptor Fields: Generative Modeling, Bi-equivariance, Steerability, and Locality"**, RSS Workshop on Symmetries in Robot Learning (2023)

[3] Junwoo Chang*, Hyunwoo Ryu*, Jiwoo Kim, Soochul Yoo, Joohwan Seo, Nikhil Potu Surya Prakash, Jongeun Choi, Roberto Horowitz (* Equal Contribution). **"Denoising Heat-inspired Diffusion with Insulators for Collision Free Motion Planning"**, NeurIPS Workshop on Diffusion Models (2023)

WORK IN PROGRESS

[1] Sarmad Idrees, Jiwoo Kim, Jongeun Choi, Soekman Son. **"Human Motion Prediction: Assessing Direct and Geometry-Aware Approaches in 3D Space"**

RESEARCH EXPERIENCE

MLCS lab, Yonsei

Jul.2022 - Present

Advisor Prof. Jongeun Choi

Undergraduate Research Intern

- Real-world Diffusion-EDF pick mug experiment using Franka Emika Panda.
 - Designed the end-to-end pick and place experiment code, engineered with ROS, C++, and Python for Franka Emika Panda.
 - Applied RTAB-Map and point cloud reconstruction techniques for visual point cloud data.
 - Led a team of 4 interns, achieving collaboration and resulting in a successful outcome.
- Reinforcement Learning (RL) project using Mujoco for custom mobile manipulation.
 - Engineered an interface with Gym, Gym-Robotics frameworks, and customized URDF files for our custom robot.
 - Implemented Soft Actor-Critic (SAC) achieving autonomous grasp-and-lift capabilities in a robotic arm.

Capstone project

Jan.2022 - Jun.2022

Advisor Prof. Jong-Moon Chung

Team leader

- Study on Azure MEC Computation Offloading Based on 5G massive Machine-Type Communications (mMTC) and Ultra-Reliable and Low Latency Communications (URLLC).

- Experimented IoT and UE Popularity-based Energy Optimization (IPEO) for data transfers based on real-time load and traffic conditions, using MATLAB and the AWS server.

SCHOLARSHIP & AWARDS

Best Academic Presentation Award

Oct.2023

- The best demo presentation for the 5th Yonsei University Mechanical Engineering Graduate Student Academic Conference.

Jilli (High-Academic Performers) Scholarship × 2

Jun., Dec.2022

- Given to high-academic performers by Yonsei University.

Samhwajibong Scholarship Foundation Scholarship

Jun.2022

Commendation Award for Social Service

May.2022

TEACHING EXPERIENCE

Engineering Information Processing (C), Teaching assistant

Sep.2023 - present

- Facilitated interactive sessions on C programming fundamentals with Linux OS.
- Assisted students with their technical errors and debugging code.

RESEARCH SKILLS

Computer Languages
Simulations
Modeling
Tools

Python, C++, C, ROS
Mujoco, Sapien, Pybullet
Meshlab, Blender, AutoDesk360
MATLAB, Latex, Xilinx Vivado, PSpice

ENGLISH PROFICIENCY

TOEFL

Total score : 114 / 120

(Reading: 29, Listening: 30, Speaking: 29, Writing: 26)

LANGUAGE

English
Korean
Spanish

Native
Native
Intermediate

OTHER EXPERIENCE

Electrical Engineering High Society

2022 - present

- Led the study group on Reinforcement Learning (RL) and Digital Signal Processing (DSP) Class.

Served in the Republic of Korea Air force

2018 - 2020

- Served in the Republic of Korean Air Force, 8th Fighter Wing, Information and Communication Battalion, as a Base Communication Control Office (B.C.C.O) soldier.

Korean Red Cross Youth (RCY)

2017 - 2018

- Volunteered to help patients diagnosed with Leprosy in the National Sorokdo Hospital, Republic of Korea.