Kim, Jae Hyung

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Objective

Passionate robotics researcher specializing in robotic intelligence and manipulation, with expertise in designing hardware and software for contact-rich tasks and sim-to-real transfer.

Education

- **M.S. in Graduate School of AI**, KAIST 03/2023 – 02/2025 (expected)
  GPA: 3.93/4.3
- **B.S. in ME & CSE**, Seoul National Univ. 03/2017 – 02/2023
  Graduated Summa Cum Laude, GPA: 4.02/4.3 (Ranking: 5/71)
  Leave of absence for military service: Jan. 2019 – Nov. 2020

Research Experience

- **KAIST Intelligent Mobile Manipulation Lab** 03/2022 – Present
  - *Low Sim-to-Real Gap Manipulator Hardware and Software Design:* **J. Kim**, J. Kim, D. Lee, Y. Jang, B. Kim (In Progress)
    Designed and modeled a 6-DoF QDD manipulator from scratch for dynamic, contact-rich manipulation. Currently working on bimanual manipulation and sim-to-real transfer using RL in Isaac Gym.
  - *An Intuitive Multi-Frequency Feature Representation for SO(3)-Equivariant Networks:* D. Son, **J. Kim**, S. Son, B. Kim, ICLR 2024
    Contributed theoretical background and developed mathematical proofs for SO(3) equivariance and properties of the proposed representation.
  - *Representation and Diffusion-based Perception Algorithm for Efficient Manipulation using Multi-view RGB Images:* D. Son, S. Son, **J. Kim**, B. Kim (under review), 2024
    Developed an object detection system using multiple RGB images and grasping techniques for transparent, shiny, and unfamiliar objects. Utilized LLM prompting for object and goal specification.
  - *Pre- and Post-Contact Policy Decomposition for Non-Prehensile Manipulation with Zero-Shot Sim-to-Real Transfer:* M. Kim, J. Han, **J. Kim**, B. Kim, IROS 2023
    Trained contact-rich manipulation policies using reinforcement learning in Isaac Gym. Fine-tuned models for sim-to-real transfer with continuous learning.
  - *Open X-Embodiment: Robotic Learning Datasets and RT-X Models*, Open X-Embodiment Collaboration, ICRA 2024, Best Paper
    Contributed to generating a zero-shot manipulation dataset for reinforcement learning.
- **SNU Movement Research Lab** 11/2021 - 02/2022
  - Developed and implemented quadrupedal locomotion algorithms using reinforcement learning using PyBullet.

Experience and Projects

- **Silver Prize at SNU Graph Pattern Matching Challenge** 06/2021 – 08/2021
  Developed and implemented graph pattern matching algorithms in C++ for complex graph structures, collaborating with a teammate using Git.
- **Intern, Samsung Electronics CE/IM**, Mobile Experience Division 08/2021 – 09/2021
  Conducted heat dissipation analysis and design for laptops using NX.

- **Robocon International Design Contest**, Tokyo Institute of Technology 08/2018
  Designed and assembled robot components using CAD and collaborated with international students on the project.
- **ZERO (Autonomous Driving Student Club)**, Seoul National Univ. 04/2021 – 08/2021
  Joined the Path Planning Team and participated in a study group focused on path planning algorithms using C++ and ROS.

Awards and Honors

- Company-sponsored Full-funded Scholarship 09/2018 – 02/2023
- Scholarship for Academic Excellence 09/2017, 03/2018

Additional Experience

- College Physics Tutor 03/2018 – 12/2018, 03/2021 – 12/2021

Skills

- Strong experience in reinforcement learning, object manipulation, and sim-to-real techniques.
- Proficient in Python, Isaac Gym, PyBullet, PyTorch, JAX, C++, and SolidWorks.
- Highly motivated and eager to learn.