Kim, Jae Hyung

kimjaehyung@kaist.ac.kr
jaehyung-kim.github.io

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 Double major: 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

  - *A 6-DoF lightweight low-cost bimanual arm with Quasi-Direct Drive actuators for general purpose:* **J. Kim**, J. Kim, D. Lee, Y. Jang, B. Kim (In Progress)
    Designed and modeled a 6-DoF QDD-based manipulator from scratch for dynamic, contact-rich manipulation. Currently working on sim-to-real transfer using RL in Isaac Gym and bimanual manipulation.

  - *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 and CLIP 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 non-prehensile 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.

- **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.

- **Intern, Samsung Electronics CE/IM**, Mobile Experience Division　　08/2021 – 09/2021
  Conducted heat dissipation analysis and design for laptops using NX.

- **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.