Sunin Kim

+82-010-8934-0495 | suninkim0@gmail.com | sunin

Objective

My goal is to integrate robots into everyday life, enabling people to lead enriched lives by offloading tedious tasks and enjoying meaningful interactions with robots.

Experience

- **NAVER LABS** *Feb. 2022 - Present*
  Robot control researcher
  - Conducted research on general manipulation policies using vision-language models (VLMs).
  - Developed optimal trajectory planning algorithms for mobile robot path following.
  - Researched unsupervised algorithms for safe skill discovery in diverse manipulation tasks.

Education

- **Korea University** *Mar. 2020 - Feb. 2022*
  M.S. in Department of Mechanical Engineering, Total GPA 4.30/4.50, Advisor: Jae-Bok Song Seoul, South Korea
  Thesis - Hierarchical object manipulation system for procedural unit task learning
- **Korea University** *Mar. 2014 - Feb. 2020*
  B.S. in Department of Mechanical Engineering, Total GPA 3.75/4.50 Seoul, South Korea

Projects

- **Locomotion and Manipulation** *Feb. 2025 - Present*
  Learning-based control for embodied robots
  - Developed data pipelines for training and fine-tuning vision-language action models (VLAs).
  - Implementing diffusion-based manipulation policies on large-scale datasets.
  - Generated motions in simulation and transferred to real-world robots.
- **2nDC Robot** *Jul. 2022 - Feb. 2025*
  Mobile robots for data center
  - Developed a docking algorithm for autonomous cart loading and charging.
  - Implemented a time-optimal path parameterization algorithm for efficient trajectory planning.
  - Developed a marker-based localization algorithm using sensor fusion with an Extended Kalman Filter (EKF).
- **AMBIDEX** *Feb. 2022 - Jul. 2022*
  Cable-driven light weight bi-manipulation robot
  - Conducted research on safe and efficient control strategies.
  - Explored skill discovery algorithms for learning diverse manipulation tasks.
  - Developed a data collection pipeline utilizing a haptic device.

Publications

[C.1] Sunin Kim*, Jaewoon Kwon*, Taeyoon Lee*, Younghyo Park* and Julien Perez: **Safety-aware unsupervised skill discovery**. *International Conference on Robotics and Automation (ICRA), 2023 * Equal Contribution, listed in alphabetical order*.

[J.1] Sunin Kim, HyunJun Jo and Jae-Bok Song: **Object manipulation system based on image-based reinforcement learning**. *Intelligent Service Robotics (ISR), 2022.*

[C.2] Sunin Kim, HyunJun Jo and Jae-Bok Song. **Generalized Object Manipulation Based on Keypoints Detection Network**. *The Korean Society of Mechanical Engineers(KSME) Conference, 2021.*

[C.3] Sunin Kim and Jae-Bok Song. **Pose Estimation using RGB-based Deep Learning and Point Cloud-based correction**. *The Korean Society of Mechanical Engineers(KSME) Conference, 2020.*

Skills

- **Programming Languages:** Python, C++
- **Libraries/Frameworks:** PyTorch, NVIDIA Isaac Sim/Lab, MuJoCo, ROS2

Awards

- **Best Paper Award** *Jul. 2021*
  18th International Conference on Ubiquitous Robots
  - **[J.1]** Object manipulation system based on image-based reinforcement learning