Dohyeok Lee

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Research Interests

My research focuses on empowering robots with physical understanding to achieve robust generalization across diverse manipulation scenarios. My approach leverages spatiotemporal dynamics, combining novel view synthesis and dynamics prediction to enable robots to adapt to novel scenarios beyond their training distribution.

Education

Seoul National University(SNU), Ph.D. in ECE — Sep 2024 – *present*

Seoul National University(SNU), M.S. in ECE — Mar 2022 – Feb 2024

Korea Advanced Institute of Science and Technology(KAIST), B.S. in EE — Mar 2016 – Feb 2020

Publications & Conferences

C=Conference, D=Demo, W=Workshop

[C2] SPQR: Controlling Q-ensemble Independence with Spiked Random Model for Reinforcement Learning — NeurIPS 2023

Dohyeok Lee, Seungyub Han, Taehyun Cho, Jungwoo Lee

[D1] ARTificial Expressions: Human-Robot Interactive Drawing *(Best Demo)* — CVPR Demo 2023

Yejin Kim, ***Dohyeok Lee***

[W2] Dynamics-Aligned Flow Matching Policy for Robot Learning — CVPR EAI Workshop 2025

Dohyeok Lee, Jung Min Lee, Munkyung Kim ,Seokhun Ju, Seungyub Han, Jin Woo Koo, Jungwoo Lee

[W1] View-Imagination: Enhancing Visuomotor Control with Adaptive View Synthesis — CVPR EAI Workshop 2025

Dohyeok Lee, Munkyung Kim, Jung Min Lee, Seungyub Han, Jungwoo Lee

[C1] Control of Furuta Pendulum with Reinforcement Learning — ICCAS 2019

Dohyeok Lee, Usama Mohammad, Dong Eui Chang

Work Experience

Robotics Engineer, D.Hive (startup) — Oct 2020 – April 2021

- Developed autonomous delivery robot with integrated sensor fusion and control systems
- Led cross-functional team of 10 engineers for full-stack development from hardware to perception modules, achieving successful outdoor autonomous navigation

Robotics Engineer Intern, Crazing Lab. (startup) — June 2019 – Aug 2019

- Developed mobile robot platform with BLDC motor control and UART communication systems
- Implemented ROS system for motor control, IMU, LiDAR, and depth camera data processing

Open Source Projects

Nonlinear controller (★ 20)

- Implemented nonlinear control (robust, adaptive, sliding mode) algorithms on two-arm manipulator simulator

EKF (★ 14)

- Implemented EKF(Extended Kalman Filter) for sensor fusion of GPS and IMU data with Kitti dataset

IMPALA

- Implemented IMPALA (distributed RL architecture) using ray, redis, and UDP

RRT

- Implemented RRT(Rapid Random Tree) algorithms

Robotics Projects

Mobile Humanoid 2024

- Developed wheel-based humanoid for navigation and object manipulation

Robot-AR system 2021

- Developed AR system integrating robot Spot with Unity, ROS

Vender 2020

- Created AI media artwork with AI based emotion recognition and autonomous vending machine system

Autonomous Mobile Robot 2018

- Developed autonomous mobile robot with YOLO, Tmap API, GPS and compass sensor, etc.

Hand-shape Manipulator 2017

- Developed hand-shape manipulator and glove-shape interface for teleoperation