

# Dohyeok Lee

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## Research Interests

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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

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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

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C=Conference, D=Demo, W=Workshop

[C2] SPQR: Controlling Q-ensemble Independence with Spiked Random Model for Reinforcement Learning	NeurIPS 2023
<i>Dohyeok Lee</i> , Seungyub Han, Taehyun Cho, Jungwoo Lee	
[D1] ARTificial Expressions: Human-Robot Interactive Drawing ( <i>Best Demo</i> )	CVPR Demo 2023
Yejin Kim, <i>Dohyeok Lee</i>	
[W2] Dynamics-Aligned Flow Matching Policy for Robot Learning	CVPR EAI Workshop 2025
<i>Dohyeok Lee</i> , Jung Min Lee, Munkyoung Kim, Seokhun Ju, Seungyub Han, Jin Woo Koo, Jungwoo Lee	
[W1] View-Imagination: Enhancing Visuomotor Control with Adaptive View Synthesis	CVPR EAI Workshop 2025
<i>Dohyeok Lee</i> , Munkyoung Kim, Jung Min Lee, Seungyub Han, Jungwoo Lee	
[C1] Control of Furuta Pendulum with Reinforcement Learning	ICCAS 2019
<i>Dohyeok Lee</i> , Usama Mohammad, Dong Eui Chang	

## Work Experience

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Robotics Engineer, D.Hive (start-up)	Oct 2020 – April 2021
<ul style="list-style-type: none"><li>Developed autonomous delivery robot with integrated sensor fusion and control systems</li><li>Led cross-functional team of 10 engineers for full-stack development from hardware to perception modules, achieving successful outdoor autonomous navigation</li></ul>	
Robotics Engineer Intern, Crazing Lab. (start-up)	June 2019 – Aug 2019
<ul style="list-style-type: none"><li>Developed mobile robot platform with BLDC motor control and UART communication systems</li><li>Implemented ROS system for motor control, IMU, LiDAR, and depth camera data processing</li></ul>	

## Open Source Projects

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Nonlinear controller (★ 20)	🔗
<ul style="list-style-type: none"><li>Implemented nonlinear control (robust, adaptive, sliding mode) algorithms on two-arm manipulator simulator</li></ul>	
EKF (★ 14)	🔗
<ul style="list-style-type: none"><li>Implemented EKF(Extended Kalman Filter) for sensor fusion of GPS and IMU data with Kitti dataset</li></ul>	
IMPALA	🔗
<ul style="list-style-type: none"><li>Implemented IMPALA (distributed RL architecture) using ray, redis, and UDP</li></ul>	
RRT	🔗
<ul style="list-style-type: none"><li>Implemented RRT(Rapid Random Tree) algorithms</li></ul>	

## Robotics Projects

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<b>Mobile Humanoid</b>	2024
<ul style="list-style-type: none"><li>• Developed wheel-based humanoid for navigation and object manipulation</li></ul>	
<b>Robot-AR system</b>	2021
<ul style="list-style-type: none"><li>• Developed AR system integrating robot Spot with Unity, ROS</li></ul>	
<b>Vender</b>	2020
<ul style="list-style-type: none"><li>• Created AI media artwork with AI based emotion recognition and autonomous vending machine system</li></ul>	
<b>Autonomous Mobile Robot</b>	2018
<ul style="list-style-type: none"><li>• Developed autonomous mobile robot with YOLO, Tmap API, GPS and compass sensor, etc.</li></ul>	
<b>Hand-shape Manipulator</b>	2017
<ul style="list-style-type: none"><li>• Developed hand-shape manipulator and glove-shape interface for teleoperation</li></ul>	