

JAEEK SHIN

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EDUCATION

B.S., Mathematics, Seoul National University	2014-2018
M.S., Mathematics, Seoul National University	2018-2020
Ph.D., Electrical and Computer Engineering, Seoul National University	2020-2026

PUBLICATIONS

* indicates equal contribution.

Preprints

- **From Prediction Uncertainty to Conformalized Distance Fields for Safe Motion Planning**
Jaeuk Shin*, Yoonseok Ra*, and Insoon Yang
2026.

Journal Publications

- **CANVAS: Competency-Aware Navigation Assessment Suite for Pedestrian Trajectory Forecasting**
Jaeuk Shin, Joon Ho Han, Gihwan Kim, Jungjin Lee, and Insoon Yang
IEEE Open Journal of Control Systems (OJ-CSYS), Early Access, 2026.
- **Multiparametric Analysis of Multi-Task Markov Decision Processes: Structure, Invariance, and Reducibility**
Jaeuk Shin and Insoon Yang
IEEE Control System Letters (L-CSS), vol. 8, pp. 928-933, 2024. (Selected for presentation at CDC'24)
- **Anderson acceleration for partially observable Markov decision processes: A maximum entropy approach**
Mingyu Park*, Jaeuk Shin*, and Insoon Yang
Automatica, vol. 164, 2024.
- **Control of Fab Lifters via Deep Reinforcement Learning: A Semi-MDP Approach**
Giho Kim*, Jaeuk Shin*, Gihun Kim, Joonrak Kim, and Insoon Yang
IEEE Transactions on Automation Science and Engineering (T-ASE), vol. 21, issue 4, pp. 5136-5148, 2024.
- **Infusing model predictive control into meta-reinforcement learning for mobile robots in dynamic environments**
Jaeuk Shin, Astghik Hakobyan, Mingyu Park, Yeoneung Kim, Gihun Kim, and Insoon Yang
IEEE Robotics and Automation Letters (RA-L), vol. 7, issue 4, pp. 10065-10072, 2022. (Selected for presentation at IROS'22)
- **Hamilton-Jacobi deep Q-learning for deterministic continuous-time systems with Lipschitz continuous controls**
Jeongho Kim, Jaeuk Shin, and Insoon Yang
Journal of Machine Learning Research (JMLR), vol. 22, no. 206, pp. 1-34, 2021.

Conference Publications

- **KoopCast: Trajectory Forecasting via Koopman Operators**
Jungjin Lee, **Jaeuk Shin**, Gihwan Kim, Joonho Han, and Insoon Yang
IEEE International Conference on Robotics & Automation (ICRA), 2026.
- **Egocentric Conformal Prediction for Safe and Efficient Navigation in Dynamic Cluttered Environments**
Jaeuk Shin, Jungjin Lee, and Insoon Yang
IEEE Conference on Decision and Control (CDC), 2025.
- **On task-relevant loss functions in meta-reinforcement learning**
Jaeuk Shin, Giho Kim, Howon Lee, Joonho Han, and Insoon Yang
Annual Learning for Dynamics & Control Conference (L4DC), 2024.

RESEARCH EXPERIENCE

Research Intern

December 2025 - June 2026

*Done in **Naver Labs***

Gyeonggi, South Korea

- Development of an RL-based visuomotor policy for end-to-end autonomous urban navigation, integrating visual perception with control in a mobile robotics platform.

Research Collaborator

December 2020 - September 2021

*Joint project with **SK hynix***

Seoul, South Korea

- Design of an efficient scheduling algorithm of FAB lifters using deep reinforcement learning

ACADEMIC SERVICES

Reviewer for Journals

- *IEEE Transactions on Robotics (T-RO)*
- *IEEE Transactions on Automation Science and Engineering (T-ASE)*
- *IEEE Robotics and Automation Letters (RA-L)*
- *IEEE Control System Letters (L-CSS)*

Reviewer for Conferences

- *International Conference on Learning Representations (ICLR)*
- *Conference on Robot Learning (CoRL)*
- *ACM International Conference on Hybrid Systems: Computation and Control (HSCC)*
- *American Control Conference (ACC)*
- *IEEE Conference on Decision and Control (CDC)*
- *Annual Learning for Dynamics and Control Conference (L4DC)*

TEACHING EXPERIENCE

Graduate Teaching Assistant

- Undergraduate Calculus II *Fall 2018, SNU*
- Linear Algebra *Spring 2019, SNU*
- Mathematical Theory and Algorithms for Optimization *Fall 2019, SNU*
- Advanced Control Techniques *Fall 2020, SNU*
- Stochastic Control and Reinforcement Learning *Spring 2021, SNU*
- Stochastic Control and Reinforcement Learning *Spring 2021, SNU*

- Advanced Control Techniques
- Linear Algebra

Fall 2022, SNU

Fall 2024, SNU

Teaching Assistant
Samsung Electronics

August 2020, July 2021

Seoul, South Korea

- Deep reinforcement learning lecture in Samsung AI Expert Educational Program

TECHNICAL STRENGTHS

Computer Languages Python, MATLAB, C++