

Junsu Kim

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Research Interests

My research has focused on solving challenging decision making problems (e.g., long-horizon tasks and robotic manipulation) via reinforcement learning (RL). Relevant topics include (i) hierarchical reinforcement learning, (ii) goal-conditioned reinforcement learning, and (iii) representation learning for RL. I am also broadly interested in diverse areas of reinforcement learning such as model-based RL and multi-agent RL. Prior to that, I worked on machine learning for drug discovery.

Education

Korea Advanced Institute of Science and Technology (KAIST) Mar 2020–present
M.S./Ph.D. in Artificial Intelligence

Korea Advanced Institute of Science and Technology (KAIST) Mar 2015–Feb 2020
B.S. in Electrical Engineering (*summa cum laude*)

Experience

Visiting scholar Feb 2024–Jul 2024
University of California, Berkeley (Advisor: [Sergey Levine](#))

Intern, Deep learning for financial service Mar 2018–Aug 2018
[AIZEN global](#), Seoul, Korea

Intern, DRAM computing core design Jun 2017–Jul 2017
[SK Hynix](#), Icheon, Korea

Visiting student Jan 2017–May 2017
Department of Electrical and Computer Engineering, National University of Singapore (NUS)

Publications

(C: Conference, J: Journal, P: Preprint, W: Workshop, *: Equal contribution)

- [C1] Visual Representation Learning with Stochastic Frame Prediction [[paper](#)]
Huiwon Jang, Dongyoung Kim, **Junsu Kim**, Jinwoo Shin, Pieter Abbeel, Younggyo Seo
International Conference on Machine Learning (ICML), 2024
- [C2] Multi-View Masked Autoencoders for Visual Control [[paper](#)]
Younggyo Seo*, **Junsu Kim***, Stephen James, Kimin Lee, Jinwoo Shin, Pieter Abbeel
International Conference on Machine Learning (ICML), 2023
RSS Workshop on Experiment-oriented Locomotion and Manipulation, 2023 (Spotlight Presentation)
- [C3] Imitating Graph-Based Planning with Goal-Conditioned Policies [[paper](#)]
Junsu Kim, Younggyo Seo, Sungsoo Ahn, Kyunghwan Son, Jinwoo Shin
International Conference on Learning Representations (ICLR), 2023
- [C4] Disentangling Sources of Risk for Distributional Multi-Agent Reinforcement Learning [[paper](#)]
Kyunghwan Son, **Junsu Kim**, Sungsoo Ahn, Roben Delos Reyes, Yung Yi, and Jinwoo Shin
International Conference on Machine Learning (ICML), 2022
- [C5] Landmark-Guided Subgoal Generation in Hierarchical Reinforcement Learning [[paper](#)]
Junsu Kim, Younggyo Seo, and Jinwoo Shin
Neural Information Processing Systems (NeurIPS), 2021
- [C6] Self-Improved Retrosynthetic Planning [[paper](#)]
Junsu Kim, Sungsoo Ahn, Hankook Lee, and Jinwoo Shin
International Conference on Machine Learning (ICML), 2021

- [C7] Guiding Deep Molecular Optimization with Genetic Exploration [paper]
Sungsoo Ahn, **Junsu Kim**, Hankook Lee, and Jinwoo Shin
Neural Information Processing Systems (NeurIPS), 2020
- [J1] Holistic Molecular Representation Learning via Multi-view Fragmentation [paper]
Seojin Kim, Jaehyun Nam, **Junsu Kim**, Hankook Lee, Sungsoo Ahn, Jinwoo Shin
Transactions on Machine Learning Research (TMLR), 2024
ICLR Workshop on Machine Learning for Materials, 2023
- [W1] Dynamics-Augmented Decision Transformer for Offline Dynamics Generalization [paper]
Changyeon Kim*, **Junsu Kim***, Younggyo Seo, Kimin Lee, Honglak Lee, Jinwoo Shin
NeurIPS Workshop on Offline Reinforcement Learning, 2022
- [P1] Unsupervised-to-Online Reinforcement Learning [paper]
Junsu Kim*, Seohong Park*, Sergey Levine
- [P2] Binary-Feedback Active Test-Time Adaptation
Taekyung Lee, Sorn Chottananurak, **Junsu Kim**, Jinwoo Shin, Taesik Gong, Sung-Ju Lee

Academic Service

Conference Reviewer: NeurIPS, ICML, ICLR, ICRA

Talks & Seminars

- “Unsupervised-to-Online Reinforcement Learning”
Hyundai Motor Group Oct 2024
- “Guiding Deep Molecular Optimization with Genetic Exploration”
GC Biopharma Aug 2023
- “Combining Handcrafted Search Algorithms with Deep Reinforcement Learning”
POSTECH (Host: Sungsoo Ahn) June 2022

Selected Honors

- Finalist, Qualcomm Innovation Fellowship Korea
Qualcomm 2021, 2022
- Naver Best Paper Award
Korean Artificial Intelligence Association 2021
- KT Prize, Post Corona AI Challenge: Infectious Disease Modelling
Korea Ministry of Science and ICT, National IT Industry Promotion Agency (NIPA), and KT 2020
- Winner, Qualcomm-KAIST Innovation Award
Qualcomm and Korea Advanced Institute of Science and Technology (KAIST) 2018
- Recipient, National Science and Engineering Undergraduate Scholarship
Korea Ministry of Science and ICT 2017-2018

Teaching Experience

- Head Teaching Assistant**, Advanced Topics in Deep Reinforcement Learning (AI707), KAIST Fall 2023
- Head Teaching Assistant**, Ph.D. Seminar: Colloquium (AI986), KAIST Spring 2023
- Head Teaching Assistant**, Deep Learning (AI502), KAIST Spring 2022
- Teaching Assistant**, Mathematics for AI (AI503), KAIST Fall 2021
- Teaching Assistant**, Advanced Deep Learning (AI602), KAIST Spring 2021
- Teaching Assistant**, Bayesian Machine Learning (AI701), KAIST Fall 2020
- Teaching Assistant**, Samsung Electronics Device Solutions, AI-Expert Program Summer 2020
- Teaching Assistant**, Deep Learning for Natural Language Processing (AI605), KAIST Spring 2020

References

Jinwoo Shin, Full Professor at KAIST

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Kimin Lee, Assistant Professor at KAIST

Email: kiminlee@kaist.ac.kr