

Jigang Kim

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last updated on March 18, 2024

RESEARCH INTEREST

- Reinforcement Learning, Deep Learning, Robotics

EDUCATION

Seoul National University	Seoul, Korea
Ph.D. Candidate in Mechanical and Aerospace Engineering	2018 – 2024
<ul style="list-style-type: none">– Dissertation: Reinforcement Learning Framework with Minimal External Interventions for Autonomous Robot Learning– Advisor: H. Jin Kim– GPA: 4.08/4.30	
Seoul National University	Seoul, Korea
B.S. in Mechanical and Aerospace Engineering	2014 – 2018
<ul style="list-style-type: none">– Thesis: Reconstructing locomotion in VR from WIP (Walking-In-Place) motion : an IMU-based, inside-out approach– Advisor: Frank Chongwoo Park and Jinwook Kim– GPA: 4.12/4.30	

EXPERIENCE

Artificial Intelligence Institute of Seoul National University (AIIS)	Seoul, Korea
Postdoctoral Researcher	March, 2024 –
Korea Institute of Science and Technology (KIST)	Seoul, Korea
Undergraduate Intern at Center for Imaging Media Research (IMRC)	March, 2017 – November, 2017
<ul style="list-style-type: none">– Locomotion Reconstruction in Virtual Reality	

PROJECTS

Transfer of Driving Dynamics Parameter between Car Models	
Hyundai Motor Company	April, 2022 – February, 2024
Transfer Learning for Multi-agent Systems	
Agency for Defense Development	October, 2019 – October, 2021
BabyMind: Infant-Mimic Developmental Machine Learning	
Korea Ministry of Science and ICT	April, 2019 – December, 2020
RL Application of an A/C Unit via Domain Randomization	
LG Electronics	August, 2019 – November, 2020

Seoul National University Undergraduate Research Program

Sigma Intelligence (RAMMUS: Omni-directional Spherical Robot)

March, 2016 – December, 2016

Seoul National University Undergraduate Research Program

Sigma Intelligence (SNU e-Wheel: Smart E-bike Conversion In-wheel Module)

March, 2015 – December, 2015

KOFAC Undergraduate Creative Convergence Research Program

Sigma Intelligence (ISAC: Intelligent Self-Assembling Cobra)

March, 2014 – December, 2014

PUBLICATIONS

- [1] D. Cho, **J. Kim**, and H. J. Kim, “Boosting autonomous reinforcement learning via action-free temporal representation and plasticity preservation”, in *submitted to ICML 2024*.
- [2] **J. Kim**, D. Cho, and H. J. Kim, “Demonstration-free autonomous reinforcement learning via implicit and bidirectional curriculum”, in *Fortieth International Conference on Machine Learning (ICML)*, 2023.
- [3] **J. Kim**, D. Jang, and H. J. Kim, “Distributed multi-agent target search and tracking with gaussian process and reinforcement learning”, *International Journal of Control, Automation and Systems*, vol. 21, no. 9, pp. 3057–3067, 2023.
- [4] D. Cho, **J. Kim**, and H. J. Kim, “Unsupervised reinforcement learning for transferable manipulation skill discovery”, *IEEE Robotics and Automation Letters*, 2022, (oral presentation, **IROS 2022**).
- [5] **J. Kim**, J. H. Park, D. Cho, and H. J. Kim, “Automating reinforcement learning with example-based resets”, *IEEE Robotics and Automation Letters*, 2022, (oral presentation, **ICRA 2023**).
- [6] S. Lee, **J. Kim**, I. Jang, and H. J. Kim, “Dhrl: A graph-based approach for long-horizon and sparse hierarchical reinforcement learning”, in *Thirty-sixth Conference on Neural Information Processing Systems (NeurIPS)*, 2022, (oral presentation, **184 out of 2672**).
- [7] J. H. Park, **J. Kim**, and H. J. Kim, “Spatio-semantic task recognition: Unsupervised learning of task-discriminative features for segmentation and imitation”, *International Journal of Control, Automation and Systems*, vol. 19, no. 10, pp. 3409–3418, 2021.
- [8] J. H. Park, **J. Kim**, Y. Jang, I. Jang, and H. J. Kim, “Learning transformable and plannable se (3) features for scene imitation of a mobile service robot”, *IEEE Robotics and Automation Letters*, vol. 5, no. 2, pp. 1664–1671, 2020, (virtual presentation, **ICRA 2020**).
- [9] S. Park, **J. Kim**, and H. J. Kim, “Zero-shot transfer learning of a throwing task via domain randomization”, in *2020 20th International Conference on Control, Automation and Systems (ICCAS)*, IEEE, 2020, pp. 1026–1030.
- [10] **J. Kim**, S. Choi, and H. J. Kim, “Fast and safe policy adaptation via alignment-based transfer”, in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE, 2019, pp. 990–996.
- [11] J.-H. Woo, **J. Kim**, D. Park, H.-J. Bae, J.-H. Kim, S.-E. Lee, S. C. Kim, and H.-J. Kwon, “Misclassified type 1 agns in the local universe”, *Journal of The Korean Astronomical Society*, vol. 47, no. 5, pp. 167–178, 2014.

HONORS, AWARDS, SCHOLARSHIPS

- Lecture & Research Scholarship 2020
- Brain Korea 21 Plus (BK21+) Research Scholarship 2018 – 2019
- Kwanjeong Educational Foundation (KEF) Domestic Scholarship 2018 – 2019

• Summa Cum Laude, Seoul National University	2018
• National Scholarship for Science and Engineering	2016 – 2017
• Excellence Award at Seoul National University Undergraduate Research Program (URP)	2016
• Encouragement Prize at Seoul National University Creative Design Competition	2016
• Encouragement Prize at KIPE 14th Intelligent Electronics (I.E) Competition	2016
• Top Prize at Seoul National University Creative Design Competition	2015
• Academic Excellence Scholarship	2014 – 2015
• Excellence Award at KOFAC Undergraduate Creative Convergence Research Program	2014
• Silver Prize at Seoul National University Electrical and Computer Engineering (SNU ECE) Contest	2014
• Bronze Prize at Samsung Techwin 2014 Robot Membership	2014
• Outstanding Freshman Scholarship	2014

TEACHING

• Teaching Assistant at Seoul National University <i>Introductory Engineering Probability (M2795.003400)</i>	Fall 2018
• Tutor at Seoul National University <i>Basic Physics 1(034.012)</i>	Spring 2017

EXTRACURRICULAR ACTIVITIES

• Sigma Intelligence, Seoul National University <i>Participated in undergrad research/competition as a hobby roboticist (hardware design/programming)</i>	2014 – 2017
• Seoul National University Philharmonic Orchestra (SNUPO) <i>Performed as an amateur violist at the 46th regular concert</i>	Winter 2014

SKILLS

- **Programming Languages:** Python, C/C++, MATLAB, Simulink
- **Frameworks:** PyTorch, TensorFlow, ROS
- **Tools:** Git, Onshape, SOLIDWORKS

LANGUAGES

- **Language: English** (native-level proficiency)
 - **ETS TOEFL (Test of English as a Foreign Language):** 110 out of 120 (expired)
 - **TEPS (Test of English Proficiency) by Seoul National University:** 585 (1+ level) out of 600 (expired)
- **Language: Korean** (native)
- **Language: Chinese** (elementary)