Joongkyu Lee

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Research Interests

Sequential Decision Making, Reinforcement Learning, Bandit Algorithms, Statistical Machine Learning, Optimization

Education

Seoul National University, Seoul, South Korea — Mar. 2023 - **Present**
Ph.D Candidate in Data Science, Advisor: Min-hwan Oh

Seoul National University, Seoul, South Korea — Feb. 2023
M.S. in Data Science, Advisor: Min-hwan Oh

Yonsei University, Seoul, South Korea — Feb. 2016
B.S. in Industrial Engineering

Publications

[6] **Improved Online Confidence Bounds for Multinomial Logistic Bandits**
J. Lee and M. Oh
arXiv preprint

[5] **Combinatorial Reinforcement Learning with Preference Feedback**
J. Lee and M. Oh
arXiv preprint

[4] **Nearly Minimax Optimal Regret for Multinomial Logistic Bandit (Top 0.2%, 32/15671)**
J. Lee and M. Oh
*Neural Information Processing Systems (**NeurIPS**), 2024.*

[3] **Randomized Exploration for Reinforcement Learning with Multinomial Logistic Function Approximation**
W. Cho, T. Hwang, J. Lee and M. Oh
*Neural Information Processing Systems (**NeurIPS**), 2024.*

[2] **Demystifying Linear MDPs and Novel Dynamics Aggregation Framework**
J. Lee and M. Oh
*International Conference on Learning Representations (**ICLR**), 2024.*

[1] **Learning Uncertainty-Aware Temporally-Extended Actions**
J.Lee, S. Park, Y. Tang, and M. Oh
*AAAI Conference on Artificial Intelligence (**AAAI**), 2024.*

Experience

Samsung Electronics | *SQL, Python* — Aug. 2018 - Dec. 2020
- Production Management Group at Samsung Electronics DS

Military Service — Mar. 2016 - Mar.2018
- Republic of Korea Air Force

Industry Projects

Development of Analysis Model to Explore Test Process Equipment Combination and Improve Flexible Test Performance — Mar. - Sep. 2022
- Director: Prof. Min-hwan Oh
- Funded by *SK hynix*

Development of an AI-Based Virtual Fighter Jet Training System — Feb. 2024 - Feb. 2025
- Director: Prof. Min-hwan Oh
- Funded by *Korea Aerospace Industries (KAI), LTD*

Invited Talks & Conference Presentation

"Combinatorial Reinforcement Learning with Preference Feedback"

- 2024 Korea Data Science Conference — Nov. 2024

"Nearly Minimax Optimal Regret for Multinomial Logistic Bandit"

- 2024 INFORMS Annual meeting, Vancouver — Oct. 2024

"Contextual Linear Bandits" and "Deep Reinforcement Learning"

- SK Telecom Market Top AI Course — July. - Aug. 2023

"Hierarchical Model-Based Reinforcement Learning with Linear Function Approximation"

- 2023 Korea Artificial Intelligence Association (KAIA), **Best Paper Award** — July. 2023
- Earlier Version of *"Demystifying Linear MDPs and Novel Dynamics Aggregation Framework"*

"Learning Uncertainty-Aware Temporally-Extended Actions"

- 2023 Korea Data Mining Society — June. 2023
- 2022 INFORMS Annual meeting, Indianapolis — Oct. 2022
- 2022 Korea Artificial Intelligence Association (KAIA) — Aug. 2022

Awards & Scholarships

Best Paper Award, Korea Artificial Intelligence Association — July. 2023

National Excellence Scholarship, Korea Student Aid Foundation — Spring. 2010 - Fall. 2013

Teaching Experience

Seoul National University, Seoul, South Korea

- Machine Learning & Deep Learning — Spring. 2022
- Data Science & Reinforcement Learning — Fall. 2021