Hyunin Lee

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Education

University of California, Berkeley — CA, United States
*Ph.D. in Mechanical Engineering / **Specialization: Reinforcement Learning*** — *Aug. 2022 –*

Seoul National University — Seoul, Rep.of.Korea
B.S in Mechanical Engineering; summa cum laude — *Mar. 2015 – Feb. 2022*

Publications / C: Conference, J: Journal, P: Preprint

[**P1**] A Hypothesis on Black swan in Unchanging Environments.
H. Lee, C. Park, D. Abel, M. Jin. *Preprint.* 2024. [**pdf**]

[**C3**] Pausing Policy Learning in Non-stationary Reinforcement Learning.
H. Lee, M. Jin, J. Lavaei, and S. Sojoudi. *ICML.* 2024. (Oral, Top 1.2%) [**pdf/ talk**]

[**J3**] Policy-based Primal-Dual Methods for Concave CMDP with Variance Reduction.
D. Ying, M. Guo, **H. Lee**, Y. Ding, J. Lavaei, and Z. Shen. *Under Revision for SIAM Journal on Mathematics of Data Science.* 2024. [**pdf**]

[**C2**] Tempo Adaptation in Non-stationary Reinforcement Learning.
H. Lee, Y. Ding, J. Lee, M. Jin, J. Lavaei, and S. Sojoudi. *NeurIPS.* 2023 [**pdf/codes/slides**]

[**J2**] Beyond Exact Gradients: Convergence of Stochastic Soft-Max Policy Gradient Methods with Entropy Regularization.
Y. Ding, J. Zhang, **H. Lee**, and J. Lavaei. *IEEE TAC.* 2024 [**pdf**]

[**C1**] Initial State Interventions for Deconfounded Imitation Learning.
S. Pfrommer, Y. Bai, **H. Lee**, and S. Sojoudi. *IEEE CDC.* 2023. [**pdf**]

[**J1**] Explainable Deep Learning Model for EMG Based Finger Angle Estimation Using Attention.
H. Lee, D. Kim, and Y. Park. *IEEE TNSRE.* vol. 30, pp. 1877-1886 2022. [**pdf/codes**]

Work Experience

University of California, Berkeley — Aug. 2022 –
Graduate Student Reseacher — ***Advisor: Prof. Javad Lavaei, Prof. Somayeh Sojoudi***

- Research on **non-stationary reinforcement learning** and **optimization** for distributional shift data.

OUTTA / [Homepage/ Linkedin] — Aug. 2021 –
Co-Founder — *South Korea*

- Provide an online AI education lecture to over **200+ underprivileged students** in South Korea every year.

Knowledge AI — Jul. 2021 – Jul.2022
Machine Learning Engineer — *Boston,MA*

- Develop a **bayesian inference algorithm** that quantifies students' understanding of math topics using Python
- Develop question-recommendation deep learning algorithm on Math online learning system using python.

Seoul National University — Mar. 2021 – Nov. 2021
Undergraduate Research Intern — *Soft Robotics & Bionics Lab*

- Propose **attention-based sequential decision making algorithm** to predict finger angles based on muscle activation on forearm using Python. Improved prediction accuracy over 10 %

Seoul National University — Sep. 2020 – Jun. 2021
Undergraduate Research Intern — *Robot Learning Lab*

- Develop **deep generative Q learning algorithm** to reconstruct a reward kernel using Python [**pdf**] [**video**]

Academic Activitiy

Reviewer ICLR 2024 2025, ICML 2024, NeurIPS 2024, IEEE TNSRE
Program Chair Committee AAAI 2025

Teaching Experience

Graduate Student Instructor, Dynamic Systems and Feedback Fall 2024

Teaching Tutor, Math and Physics for Freshman Spring 2019, Spring 2020

Teaching Assistant, Dynamic Fall 2019

Teaching Assistant, Mechanical Product Design Fall 2020

Grants and Honors

Berkeley Summer Research Fellowship | *Mechanical Engineering Department* Summer 2024

NeurIPS scholar award | *Conference on Neural Information Processing Systems* Dec. 2023

Kwanjeong Abroad Scholarship | *Kwanjeong Educational Foundation* Fall 2022 – Present

Berkeley Fellowship for Graduate Study | *Graduate Division* Fall 2022 – Spring 2023

National Science & Technology Scholarship | *Korea Student Aid Foundation* Spring 2017, Fall 2019
Spring 2020, Fall 2020

Certificate of Appreciation (OUTTA) | *Dean, college of Engineering, Seoul National University* Jun. 2021

Scholarship to Academic Excellence | *Seoul National University* Spring 2015, Fall 2015
Spring 2016, Fall 2016

Graduate courses

Specialization: Non-convex Optimization & Reinforcement Learning

Theoretical statistics I, II, **Probability Theory I, II**
Convex Optimization (convex optimziation, robust optimization)
Advanced control system I (canonical state-space representation forms, Lyapunov stability, LQR control)
Experiential advanced control design I, II (model predictive control, kalman filter)
Mathematical Programming II (Advanced optimization theory, non-convex optimization)

Technical Skills

Languages: Python (Advanced), MatLab (Advanced), C++
Software library, platform : Pytorch (Advanced), Tensorflow. Gurobi (Advanced), CPLEX (Advanced)