Taehyun Cho

talium@cml.snu.ac.kr +82-10-5519-3089 https://cml.snu.ac.kr

Research Interest

My academic research focuses on risk-sensitive decision-making and distributional robustness. I draw inspiration from human decision-making processes, aiming to mathematically model and optimize them to uncover theoretical insights and practical solutions.

- **Broad :** *Deep Learning, Reinforcement Learning,* and *Stochastic Optimization*.
- **Specific :** *Distributional Reinforcement Learning, Regret Analysis*, and *Reinforcement Learning from Human Feedback*.

Education

March 2020 – Ongoing
Seoul National University, Seoul, South Korea
Ph.D. in Electrical Engineering and Computer Science

March 2013 – 2020
Korea University, Seoul, South Korea
B.S. in Mathematics

Research Experience

March 2020 - Ongoing
Graduate Researcher
Cognitive Machine Learning Lab

- Adviser : Prof. Jungwoo Lee
- Study on *Reinforcement Learning Theory, Deep Reinforcement Learning,* and *Stochastic Optimization*.
- Interest in *Information Theory, Bandit Algorithm,* and *Game Theory*.

Teaching Experience

Spring 2022
Teaching Assistant
Department of Electrical Engineering and Computer Science, Seoul National University

- Introduction to Reinforcement Learning

Spring 2021
Teaching Assistant
Department of Electrical Engineering and Computer Science, Seoul National University

- Introduction to Reinforcement Learning

Talks

May 2025
LG AI Research Seminar
LG AI Research

- Policy Optimization with Process Score in LRMs

December 2024
LG AI Research Seminar
LG AI Research

- Policy-labeled Preference Learning: Is Preference Enough for RLHF?

August 2023
LG Tech Talk
LG AI Research

- Pitfall of Optimism: Distributional Reinforcement Learning with Randomized Risk Criterion

May 2023 | **AIIS Spring Retreat Program**
Seoul National University
- Pitfall of Optimism: Distributional Reinforcement Learning with Randomized Risk Criterion

Other Experience

December 2024 – May 2025 | **LG AI Research Internship**
Superintelligence Lab
- RLHF Squad Team (Developing process reward model)

2022 – Ongoing | **AI Conference Reviewer Services**
- International Conference on Machine Learning (ICML) 2025, 2024, 2023, 2022
- Neural Information Processing Systems (NeurIPS) 2024, 2023, 2022
- International Conference on Learning Representations (ICLR) 2024, 2023
- AAAI Conference on Artificial Intelligence (AAAI) 2023

June 2018 – Ongoing | **Philosophy Club**
Sunday Salon
- Discuss a topic on Baccalauréat

May 2016 – 2018 | **Military Service**
Air Force
- Military Service on 3rd Flight Training Wing

Skills

Computer Skills
- Python, Numpy, Pytorch

Language Skills
- Korean(Native), English(Fluent)

Publications

International Conference

1. **(Spotlight, Top 2.6%) Taehyun Cho***, Seokhun Ju*, Seungyub Han, Dohyeong Kim, Kyungjae Lee, and Jungwoo Lee, "Policy-based Preference Learning: Is Preference Enough for RLHF?", ICML 2025, Canada.
2. **Taehyun Cho**, Seungyub Han, Seokhun Ju, Dohyeong Kim, Kyungjae Lee, and Jungwoo Lee, "Bellman Unbiasedness: Toward Provably Efficient Distributional Reinforcement Learning with General Value Function Approximation", ICML 2025, Vancouver, Cananda.
3. Dohyeong Kim, **Taehyun Cho**, Seungyub Han, Hojun Chung, Kyungjae Lee, and Sunghwai Oh, "Spectral-Risk Safe Reinforcement learning with Convergence Guarantees", NeurIPS 2024, Vancouver, Canada.
4. **Taehyun Cho**, Seungyub Han, Heesoo Lee, Kyungjae Lee, and Jungwoo Lee, "Pitfall of Optimism: Distributional Reinforcement Learning by Randomizing Risk Criterion", NeurIPS 2023, New Orleans, USA.
5. Dohyeok Lee, Seungyub Han, **Taehyun Cho** and Jungwoo Lee, "SPQR: Controlling Q-ensemble Independence with Spiked Random Model for Reinforcement Learning", NeurIPS 2023, New Orleans, USA.
6. Seungyub Han, Yeongmo Kim, **Taehyun Cho**, and Jungwoo Lee, “On the Convergence of Continual Learning with Adaptive Methods”, UAI 2023.
7. Seungyub Han, Yeongmo Kim, **Taehyun Cho**, Jungwoo Lee, “Adaptive Methods for Nonconvex Continual Learning,” Neurips 2022 Workshop, New Orleans, USA.
8. **Taehyun Cho**, Seungyub Han, Heesoo Lee, Kyungjae Lee, Jungwoo Lee, “Perturbed Quantile Regression for Distributional Reinforcement Learning,” Neurips 2022 Workshop, New Orleans, USA.
9. Sangwoo Hong, Heecheol Yang, Youngseok Yoon, **Taehyun Cho**, and Jungwoo Lee, “Chebyshev Polynomial Codes:

Task Entanglement-based Coding for Distributed Matrix Multiplication" ICML 2021, Vienna, Austria, July 18-24, 2021.

10. Heasung Kim, **Taehyun Cho**, Jungwoo Lee, Wonjae Shin, Harold Vincent Poor, "An Efficient Neural Network Architecture for Rate Maximization in Energy Harvesting Downlink Channels," 2020 IEEE International Symposium on Information Theory, LA, USA, June 21-26, 2020

International Journal

1. Heasung Kim, **Taehyun Cho**, Jungwoo Lee, Wonjae Shin, and H. Vincent Poor, "Optimized Shallow Neural Networks for Sum-Rate Maximization in Energy Harvesting Downlink Multiuser NOMA Systems," IEEE Journal on Selected Areas in Communications, vol.39, no.4, pp. 982 – 997, Apr. 2021.

Preprints

1. **Taehyun Cho**, Seungyub Han, Seokhun Ju, Dohyeong Kim, Kyungjae Lee, and Jungwoo Lee, "Distributionally Robust and Provably Efficient Distributional Reinforcement Learning with General Value Function Approximation".
2. (On submission) Seungyub Han, **Taehyun Cho**, Dohyeong Kim, Kyungjae Lee, and Jungwoo Lee, "Time to Truncate Trajectory: Stochastic Retrace for Multi-step Off Policy Reinforcement Learning".