

# Taehyun Cho

AI Researcher • Reinforcement Learning & Decision Theory

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## Research Experience

- Aug 2026 – Present **Postdoctoral Fellow** — *Vector Institute & Fields Institute, Toronto, Canada*
- *Vector Distinguished Postdoctoral Fellowship*
  - *Principles of Intelligence Postdoctoral Fellowship*
  - Host PI: Prof. Tim G. J. Rudner (University of Toronto)
- Mar 2026 – Present **Postdoctoral Fellow** — *Cognitive Machine Learning Lab, SNU*
- *Sejong Science Fellowship*
  - Advisor: Prof. Jungwoo Lee
- Dec 2024 – May 2025 **Research Intern** — *Superintelligence Lab, LG AI Research*
- RLHF Squad Team — developing process reward models
- Mar 2020 – Feb 2026 **Graduate Researcher** — *Cognitive Machine Learning Lab, SNU*
- Advisor: Prof. Jungwoo Lee

## Education

- Mar 2022 – 2026 **Seoul National University**, Seoul, South Korea  
*Ph.D. in Electrical and Computer Engineering*
- Mar 2020 – 2022 **Seoul National University**, Seoul, South Korea  
*M.S. in Electrical and Computer Engineering*
- Mar 2013 – 2020 **Korea University**, Seoul, South Korea  
*B.S. in Mathematics*

## Research Interests

My research focuses on *sequential decision-making under uncertainty*, particularly in the context of *human feedback*. I have extensively studied *distributional reinforcement learning (DistRL)*, *reinforcement learning from human feedback (RLHF)*, and *regret analysis*, aiming to bridge theory and practice.

My long-term goal is to build *human-aligned, socially-aware agents* — systems that reason about people, navigate the dynamics of human interaction, and act on their preferences, values, and decisions. I draw inspiration from how humans make decisions. By seeking to understand the cognitive mechanisms underlying human choice and mathematically modeling the structure that governs interaction, I aim to develop both theoretical insights and practical algorithms for robust decision-making under uncertainty.

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

## Publications

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### International Conferences

1. **[Spotlight, Top 2.2%]** Suhwan Kim\*, **Taehyun Cho\***, Geonhyeong Kim, Yujin Kim, Youngsoo Jang, Moontae Lee, Jungwoo Lee. “A Regret Minimization Framework on Preference Learning in Large Language Models.” *ICML 2026*, Seoul, Korea.
2. Jung Min Lee, Dohyeok Lee, Seokhun Ju, **Taehyun Cho**, Jin Woo Koo, Li Zhao, Sangwoo Hong, Jungwoo Lee. “MVP-LAM: Learning Action-Centric Latent Action via Cross-Viewpoint Reconstruction.” *ICML 2026*, Seoul, Korea.
3. Kyungjae Lee, Dohyeong Kim, **Taehyun Cho**, Chaeyeon Kim, Yunkyoung Ko, Seungyub Han, Seokhun Ju, Dohyeok Lee, Sungbin Lim. “Pareto Optimal Risk-Agnostic Distributional Bandits with Heavy-Tail Rewards.” *NeurIPS 2025*, San Diego, USA.
4. **[Spotlight, Top 2.6%]** **Taehyun Cho\***, Seokhun Ju\*, Seungyub Han, Dohyeong Kim, Kyungjae Lee, Jungwoo Lee. “Policy-based Preference Learning: Is Preference Enough for RLHF?” *ICML 2025*, Vancouver, Canada.
5. **Taehyun Cho**, Seungyub Han, Seokhun Ju, Dohyeong Kim, Kyungjae Lee, Jungwoo Lee. “Bellman Unbiasedness: Toward Provably Efficient Distributional Reinforcement Learning with General Value Function Approximation.” *ICML 2025*, Vancouver, Canada.
6. Dohyeong Kim, **Taehyun Cho**, Seungyub Han, Hojun Chung, Kyungjae Lee, Songhwai Oh. “Spectral-Risk Safe Reinforcement Learning with Convergence Guarantees.” *NeurIPS 2024*, Vancouver, Canada.
7. **Taehyun Cho**, Seungyub Han, Heesoo Lee, Kyungjae Lee, Jungwoo Lee. “Pitfall of Optimism: Distributional Reinforcement Learning by Randomizing Risk Criterion.” *NeurIPS 2023*, New Orleans, USA.
8. Dohyeok Lee, Seungyub Han, **Taehyun Cho**, Jungwoo Lee. “SPQR: Controlling Q-ensemble Independence with Spiked Random Model for Reinforcement Learning.” *NeurIPS 2023*, New Orleans, USA.
9. Seungyub Han, Yeongmo Kim, **Taehyun Cho**, Jungwoo Lee. “On the Convergence of Continual Learning with Adaptive Methods.” *UAI 2023*, Pittsburgh, USA.
10. Seungyub Han, Yeongmo Kim, **Taehyun Cho**, Jungwoo Lee. “Adaptive Methods for Nonconvex Continual Learning.” *NeurIPS 2022 Workshop*, New Orleans, USA.
11. **Taehyun Cho**, Seungyub Han, Heesoo Lee, Kyungjae Lee, Jungwoo Lee. “Perturbed Quantile Regression for Distributional Reinforcement Learning.” *NeurIPS 2022 Workshop*, New Orleans, USA.
12. Sangwoo Hong, Heecheol Yang, Youngseok Yoon, **Taehyun Cho**, Jungwoo Lee. “Chebyshev Polynomial Codes: Task Entanglement-based Coding for Distributed Matrix Multiplication.” *ICML 2021*, Vienna, Austria.

### International Journals

1. Seokhun Ju, Seungyub Han, **Taehyun Cho**, Jungwoo Lee, Taeyoung Lee, Minkyoung Kim, Jinho Ahn. “Learning Graph Based Individual Intrinsic Reward for Multi-Agent Reinforcement Learning.” *ICT Express*, Aug. 2025.
2. Heasung Kim, **Taehyun Cho**, Jungwoo Lee, Wonjae Shin, 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.
3. Heasung Kim, **Taehyun Cho**, Jungwoo Lee, Wonjae Shin, H. Vincent Poor. “An Efficient Neural Network Architecture for Rate Maximization in Energy Harvesting Downlink Channels.” *IEEE ISIT 2020*, Los Angeles, USA, June 21–26, 2020.

### Ph.D. Dissertation

1. **Taehyun Cho**. “A Distributional Perspective on Human-Aligned Decision Making under Uncertainty.” *Seoul National University*, Feb. 2026.  
**Committee:** Jungwoo Lee (Advisor), Songhwai Oh, Kyomin Jung, Taesup Moon, Kyungjae Lee.

## Preprints & In Progress

1. (*Under submission*) Seungyub Han, **Taehyun Cho**, Dohyeong Kim, Kyungjae Lee, Jungwoo Lee. “When to Truncate Traces: Stochastic Truncation for Multi-Step Off-Policy RL.”
2. (*Under submission*) Kukyoung Jang, **Taehyun Cho**, Junrui Zhang, Ping Xu, Kyungjae Lee. “Probabilistic Smoothing with Ratio-Monotone Transforms for Global Optimization.”
3. **Taehyun Cho**, Suhwan Kim, Seungyub Han, Kyungjae Lee, Jungwoo Lee. “The Unique Off-Policy Admissibility of KL-divergence in Direct Preference Optimization.”
4. **Taehyun Cho**, Suhwan Kim, Seungyub Han, Seokhun Ju, Dohyeong Kim, Kyungjae Lee, Jungwoo Lee. “An Axiomatization of Process Score Model: Your Process-level Feedback is Not a Reward.”
5. Seungyub Han\*, **Taehyun Cho**\*, Suhwan Kim, Seokhun Ju, Dohyeong Kim, Kyungjae Lee, Jungwoo Lee. “Off-Policy Trust Region Preference Optimization.”

## Teaching Experience

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- Spring 2022      **Teaching Assistant** — *Dept. of Electrical Engineering and Computer Science, SNU*
- Introduction to Reinforcement Learning.
- Spring 2021      **Teaching Assistant** — *Dept. of Electrical Engineering and Computer Science, SNU*
- Introduction to Reinforcement Learning.

## Talks

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- Apr 2026      **Vector Visitor Research Talk** — *Vector Institute*  
“Rethinking Human Feedback: A Regret Minimization Perspective on Preference Learning.”
- Apr 2026      **SNU AI Summit** — *Seoul National University*  
“Policy-labeled Preference Learning: Is Preference Enough for RLHF?”
- May 2025      **LG AI Research Seminar** — *LG AI Research*  
“Policy Optimization with Process Score in LRMs.”
- Dec 2024      **LG AI Research Seminar** — *LG AI Research*  
“Policy-labeled Preference Learning: Is Preference Enough for RLHF?”
- Aug 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.”

## Awards and Honors

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- Aug 2026 – 2027      **Vector Distinguished Postdoctoral Fellowship** — *Vector Institute*
- Aug 2026 – 2027      **Principles of Intelligence Postdoctoral Fellowship** — *Fields Institute*
- May 2026      **INMC Young Researcher Award** — *Institute of New Media and Communications (INMC)*
- May 2026      **Gold Reviewer Award** — *International Conference on Machine Learning (ICML)*
- Mar 2026 – 2031      **Sejong Science Fellowship** — *National Research Foundation of Korea (NRF)*

Feb 2026	<b>Distinguished Dissertation Award</b> — <i>Seoul National University (SNU)</i>
Mar 2020 – 2026	<b>Brain Korea 21 Plus Scholarship</b> — <i>Seoul National University (SNU)</i>
Jan 2023	<b>Certificate of Commendation</b> — <i>Center for Applied Research in Artificial Intelligence (CARAI)</i>

## Other Experience

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2022 – Present	<b>Conference &amp; Workshop Reviewer</b> <ul style="list-style-type: none"><li>• ICML 2022–2026 — <i>Gold Reviewer Award (Top 25%)</i></li><li>• Workshop @ ICML 2026: RLxF — Reinforcement Learning from World Feedback</li><li>• NeurIPS 2022–2025</li><li>• ICLR 2023–2025</li><li>• AAI 2023</li><li>• The Journal of Korean Institute of Communications and Information Sciences, 2026</li></ul>
Jun 2018 – Present	<b>Philosophy Club</b> — <i>Sunday Salon</i> <ul style="list-style-type: none"><li>• Discussions on Baccalauréat topics</li></ul>
May 2016 – 2018	<b>Military Service</b> — <i>Republic of Korea Air Force</i> <ul style="list-style-type: none"><li>• Served at 3rd Flight Training Wing</li></ul>

## Skills

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**Programming:** Python, NumPy, PyTorch.

**Languages:** Korean (Native), English (Fluent).