Geonwoo Cho

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Research Interest

Reinforcement Learning: Unsupervised RL, Scalable RL, RL for Large Models

Education

Gwangju Institute of Science and Technology (GIST) Feb. 2019 – Present

Candidate for B.S. in Electrical Engineering and Computer Science, Minor in Mathematics

- Total: 4.0/4.5, Major: 4.1, Math: 4.21, expected *Cum Laude* graduation in Aug 2026
- Took a leave of absence for mandatory military service, Jan. 2021 – Jan. 2023

University of California, Berkeley Jan. 2025 – Aug. 2025

Exchange student funded by GIST

Korea Science Academy of KAIST Mar. 2016 – Feb. 2019

High school diploma, Studied Astrophysics

Publications

Conference and Workshop Papers

[1] **G. Cho**, J. Im, J. Lee, H. Yi, S. Kim, S. Kim. TRACED: Transition-aware Regret Approximation with Co-learnability for Environment Design. ICLR 2026. CoRL Workshop 2025.

[2] **G. Cho***, J. Lee*, J. Im, S. Lee, J. Lee, S. Kim. AMPED: Adaptive Multi-objective Projection for Balancing Exploration and Skill Diversification. ICLR 2026. CoRL Workshop 2025.

[3] **G. Cho**, J. Im, D. Kim, S. Kim. Causal-Paced Deep Reinforcement Learning. Reinforcement Learning Conference Workshop 2025 (oral).

[4] **G. Cho***, S. Lee*, J. Lee. Evaluating Simplicial Normalization in Multi-Task Reinforcement Learning. Korea Software Congress 2024 (poster).

[5] S. Cho, **G. Cho**, Y. Kim. Development of a Deep Learning-Based House-Tree-Person Test Analysis Model. Korea Information Processing Society 2021 (poster).

[6] **G. Cho**, D. Park, H. Kim. LSTM-based Earthquake Anomaly Detection Applied to Total Electron Current Data. Korea Artificial Intelligence Conference 2020 (poster).

Preprints and Works in Progress

[7] **G. Cho**, Y. Zhu. Offline-Phibe: A PDE-Based Model-Free Framework for Continuous-Time Offline Reinforcement Learning. In preparation.

[8] **G. Cho**, J. Im, D. Kim, L. Li. Annealing Bridges Offline and Online RL. Preprint.

Research Experience

Statistics and Data Science, UCLA | *Advised by Prof. Yuhua Zhu* June. 2025 – present

- Investigated a PDE-based continuous-time formulation for offline reinforcement learning.

Biostatistics, Berkeley | *Advised by Prof. Lexin Li* Jan. 2025 – present

- Developed an offline-to-online reinforcement learning framework to ensure stable performance transfer.

DataScience Lab, GIST | *Advised by Prof. Sundong Kim* April. 2024 – present

- Led three research projects, resulting in **two first-author and one co-author publications**.
- Proposed a skill-based RL framework that balances exploration and diversity.
- Designed an unsupervised environment design algorithm using transition-error-aware regret approximation and co-learnability.
- Developed a curriculum-learning framework that exploits causal structure for efficient task sequencing.

AITER Lab, GIST | *Advised by Prof. Hongkook Kim* Jun. 2020 – Dec. 2020

- Applied time series models to Total Electron Current data for earthquake prediction.

Work Experience

Team Learners | *Machine Learning Software Engineer* Aug. 2023 – Jan. 2024

- Reduced stable diffusion models' inference time by employing graph optimization techniques.

Match Group/Hyperconnect LLC | *Machine Learning Software Engineer* Jun. 2022 – Jul. 2023

- Developed the transformer-based matchmaking system that handles 1K requests/sec (large-scale server model) with <0.001% downtime. The server model surpassed the previous in-house state-of-the-art model by increasing revenue 3%p and retention by 7%p.
- Enhanced feature store performance, lowering p99 latency from 200ms to 150ms by altering database usage patterns and adopting Avro serialization.

Business Canvas | *Software Engineer* Dec 2021 – Jun. 2022

- Achieved 99.95% availability rate by introducing microservice architecture and enhancing observability.

Algorima | *Software Engineer* Dec 2020 – Jun. 2021

- Designed and implemented web/server services and ML pipelining framework.

Patent

[1] **G. Cho**, J. Im, D. Kim, S. Kim. *Method and system for task prioritization reinforcement learning based on structural differences.* P25-0110-KR01.

[2] **G. Cho**, J. Im, S. Kim, S. Kim. *Methods and systems for learning based on difficulty and mutual learning.* P25-0109-KR01.

[3] **G. Cho**, J. Lee, S. Kim. *Probabilistic Gradient Surgery Based Multi-Task Skill Learning System.* P25-0107-KR01.

Talks

Dev Night (GIST) Sep. 2024
Feature Store Implementation for Real-Time Recommender Systems

Awards and Honors

Dream AI Open Challenge - 4th Prize (Korea Ministry of Science and ICT) Dec. 2020
ICPC - Advanced to Seoul Regional (ACM) Jun. 2020
Creative Convergence Competition "GIST President Award" - 1st Prize (GIST) Dec. 2019
Government Funded Scholarship (GIST) Feb. 2019 – present
Academic Excellence Scholarship (GIST) Aug. 2024 – Dec. 2024

Extracurricular Experience

Co-founder, Car Wash Love June. 2023 – Aug. 2023
Launched the mobile app for the door-to-door car wash service.
Open Source Contributions
Pytorch Geometric / Numba Llvmlite

Teaching

Industry Mentor, F-Lab Feb. 2024 – present
Software Engineering / DevOps
GIST Teaching Assistant Feb. 2024 – Dec. 2025
Single Variable Calculus and Applications / Machine Learning & Deep Learning
GIST Volunteer Tutoring Program Sep. 2020 – Dec. 2020
Middle School Mathematics

Selected Coursework

Mathematics: Differential Geometry, Linear Algebra, Real Analysis, Abstract Algebra, Elementary Number Theory, Differential Equations, Multivariable Calculus
Computer Science: Computer Architecture, System Programming, Signals and Systems, Programming Languages and Compilers, Machine Learning & Deep Learning, Advanced LLM Agents