Changhun Kim

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Research Interests

My research focuses on developing trustworthy machine learning systems that enable reliable deployment. In particular, I am committed to developing robust deep generative models, designing algorithms with strong empirical foundations and theoretical guarantees, and conducting theoretical analysis on existing methods with machine learning theory.

Keywords: Trustworthy Machine Learning, Deep Generative Models, Machine Learning Theory

Education

Korea Advanced Institute of Science and Technology (KAIST) Daejeon, Korea
M.S. in Artificial Intelligence (Advisor: Prof. Eunho Yang) Feb. 2022 – Feb. 2024
- GPA: 4.25/4.3, 4.00/4.0, 99.5% (Department Salutatorian, Top 0.7% of all Departments)

B.S. in Computer Science and Mathematics (Double Major) Feb. 2017 – Feb. 2022
- GPA: 3.92/4.3, 3.81/4.0, 96.2% (Magna Cum Laude, Top 9% in the Department)

Publications

M: Manuscript, C: Conference, W: Workshop, *: Equal Contribution

[M4] Joohyung Lee, **Changhun Kim**, Hyunsu Kim, Kwanhyung Lee, Juho Lee. "**Soft Equivariance Regularization for Invariant Self-Supervised Learning**." *Under Review at Conference on Neural Information Processing Systems (**NeurIPS**)*, 2025.

[M3] **Changhun Kim***, Yechan Mun*, Hyeongwon Jang, Eunseo Lee, Sangchul Hahn, Eunho Yang. "**Delta-XAI: A Unified Framework for Explaining Prediction Shifts in Online Time Series**." *Under Review at Conference on Neural Information Processing Systems (**NeurIPS**)*, 2025.

[M2] **Changhun Kim**, Joohyung Lee, Kwanhyung Lee, Donghwee Yoon, Eunho Yang. "**SPAM: Sampling Pattern Meta-Learning for Domain Generalization on Irregular Time Series**." *Under Review at Conference on Neural Information Processing Systems (**NeurIPS**)*, 2025.

[M1] **Changhun Kim***, Yechan Mun*, Sangchul Hahn, Eunho Yang. "**DeltaSHAP: Explaining Prediction Evolutions in Online Patient Monitoring with Shapley Values**." *Under Review at ICML Workshop on Actionable Interpretability*, 2025.

[C4] Hyeongwon Jang*, **Changhun Kim***, Eunho Yang. "**TIMING: Temporality-Aware Integrated Gradients for Time Series Explanation**." *International Conference on Machine Learning (**ICML**)*, 2025 (**Spotlight, 313/12107=2.6%**). *ICLR Workshop on XAI4Science: From Understanding Model Behavior to Discovering New Scientific Knowledge*, 2025.

[C3] Wooseok Han*, Minki Kang*, **Changhun Kim**, Eunho Yang. "**Stable-TTS: Stable Speaker-Adaptive Text-to-Speech Synthesis via Prosody Prompting**." *IEEE International Conference on Acoustics, Speech, and Signal Processing (**ICASSP**)*, 2025.

[C2] Hajin Shim*, **Changhun Kim***, Eunho Yang. "**CloudFixer: Test-Time Adaptation for 3D Point Clouds via Diffusion-Guided Geometric Transformation**." *European Conference on Computer Vision (**ECCV**)*, 2024.

[C1] **Changhun Kim**, Joonhyung Park, Hajin Shim, Eunho Yang. "**SGEM: Test-Time Adaptation for Automatic Speech Recognition via Sequential-Level Generalized Entropy Minimization**." *Conference of the International Speech Communication Association (**INTERSPEECH**)*, 2023 (**Oral, 348/2293=15.2%**).

[W1] **Changhun Kim***, Taewon Kim*, Seungyeon Woo, June Yong Yang, Eunho Yang. "**AdapTable: Test-Time Adaptation for Tabular Data via Shift-Aware Uncertainty Calibrator and Label Distribution Handler**." *NeurIPS Workshop on Table Representation Learning*, 2024.

Research Experience

AITRICS Seoul, Korea
Machine Learning Researcher (Advisor: Prof. Eunho Yang, Prof. Juho Lee) Nov. 2023 – Present
- Enhance the robustness and explainability of early prediction models for critical clinical outcomes [M3, M1, C4, M2, P2].

KAIST Machine Learning and Intelligence Lab Daejeon, Korea
Research Assistant (Advisor: Prof. Eunho Yang) Mar. 2022 – Feb. 2024
- Explored modality-specific test-time adaptation strategies for diverse tasks including 3D point cloud classification, zero-shot transfer of vision-language models, automatic speech recognition, tabular learning, and time series classification [W1, C2, C1, P1].

Undergraduate Researcher (Advisor: Prof. Eunho Yang) Jun. 2021 – Feb. 2022
- Investigated a style-matching denoiser for automatic speech recognition.

KAIST Vehicular Intelligence Lab Daejeon, Korea
Undergraduate Researcher (Advisor: Prof. Dongsoo Har) Oct. 2019 – Aug. 2020
- Researched deep reinforcement learning algorithms and developed a block coding system to automatically generate rule-based and deep learning codes for the International Robot Olympiad AI Soccer Challenge.

Work Experience

DeepNatural Seoul, Korea
Machine Learning Engineer (Advisor: Anson Park) Sept. 2020 – Feb. 2021
- Constructed machine learning systems for speaker verification/diarization, Duchenne smile classification, smart cushion sitting posture prediction, and medical product recommendation.

Netmarble Seoul, Korea
Data Engineer (Advisor: Sungwoo Lee) Jun. 2019 – Aug. 2019
- Developed log-based real-time OLAP service for the Seven Knights mobile game.

Patents

[P2] **Changhun Kim**, Sangchul Hahn, Kwang Joon Kim. "**Method for Providing Explanation for Patient State Prediction and Electronic Apparatus Therefor**." *KR Patent App.* 10-2025-0009664, 2025.

[P1] Eunho Yang, **Changhun Kim**, Joonhyung Park, Hajin Shim. "**Test-Time Adaptation for Automatic Speech Recognition via Sequential-Level Generalized Entropy Minimization**." *US Patent App.* 18/594,442, 2024. *KR Patent App.* 10-2024-0006413, 2024. *KR Patent App.* 10-2024-0023266, 2024.

Awards and Honors

Top Reviewer (206/10943=1.9%), ICML 2025 May 2025
Complimentary Registration, ICML 2025 May 2025
Dongwon Full Masters Scholarship, Dongwon Group Spring 2022 – Fall 2023
Silver Prize, Korean Undergraduate Mathematics Competition Jan. 2022
National Full Undergraduate Scholarship, Korea Student Aid Foundation Spring 2017 – Fall 2021
KAIST Convergence AMP Scholarship, KAIST School of Computing Mar. 2019

Professional Activities

Teaching Experience
Teaching Assistant, Tabular Learning, Hanwha Ocean Capstone Project Spring 2023
Teaching Assistant, AI Soccer Challenge, Bokja Girls' High School AI Education Program Fall 2020

Mentoring Experience
Hyeongwon Jang, Research Assistant, KAIST Oct. 2024 – Apr. 2025
Wooseok Han, Researcher, AITRICS Mar. 2024 – Nov. 2024
Taewon Kim, Undergraduate Researcher, KAIST Mar. 2023 – Nov. 2023
Sungwoo Cho, Undergraduate Researcher, KAIST Sept. 2022 – Apr. 2023

Academic Service
Journal Reviewer: TMLR, TNNLS
Conference Reviewer: NeurIPS, ICML, ICLR, IJCAI, ACL, ICASSP, LoG

Skills

Programming: Python, C, Java, JavaScript, SQL, Bash, LaTeX, PyTorch
Language: Native in Korean, Advanced in English