Changhun Kim

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Research Interests

My research focuses on building algorithmic and theoretical foundations for trustworthy machine learning that enable reliable deployment. In particular, I am interested in trustworthy deep generative models, provable algorithms with strong empirical motivation, and theoretical analysis grounded in 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 (Department Salutatorian, Top 0.7% in the class)

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

Employment

UBC Computer Vision Lab Vancouver, BC, Canada (Remote)
External Collaborator (Advisor: Prof. Evan Shelhamer) Jul. 2025 – Present
- Developing continual test-time adaptation for long-horizon test streams where domains evolve, recur, mix, and include noisy samples, using per-sample domain routing, malicious sample filtering, and adaptive resetting.

AITRICS Seoul, Korea
Machine Learning Researcher (Advisor: Prof. Eunho Yang, Prof. Juho Lee) Nov. 2023 – Present
- Designed time series XAI algorithms for explaining temporal attributions and prediction changes [C4, W2, C7].
- Improving domain generalization on irregular time series under sampling pattern shifts via meta-learning [M2].
- Exploring flow matching for irregular time series generation and augmentation for downstream tasks.

KAIST Machine Learning and Intelligence Lab Daejeon, Korea
Research Assistant (Advisor: Prof. Eunho Yang) Feb. 2022 – Feb. 2024
- Extended modality-aware test-time adaptation beyond 2D vision, identifying and addressing modality-specific challenges in 3D point clouds, vision-language models, speech, tabular data, and time series [C1, C2, W1].

Undergraduate Researcher (Advisor: Prof. Eunho Yang) Jun. 2021 – Feb. 2022
- Investigated a style-matching denoiser that transforms noisy speech toward source domain style to mitigate distribution shifts, improving automatic speech recognition performance.

DeepNatural Seoul, Korea
Machine Learning Engineer (Advisor: Anson Park) Sept. 2020 – Feb. 2021
- Implemented end-to-end ML systems for speaker verification/diarization, Duchenne smile detection, sitting posture prediction, and medical product recommendation, gaining experience in model training, inference, and deployment.

KAIST Vehicular Intelligence Lab Daejeon, Korea
Undergraduate Researcher (Advisor: Prof. Dongsoo Har) Oct. 2019 – Aug. 2020
- Studied deep reinforcement learning in multi-agent AI robot soccer, tackling sparse rewards and ambiguous action spaces, and developed a block-coding framework to generate rule- and learning-based agents.

Netmarble Seoul, Korea
Data Engineer (Advisor: Sungwoo Lee) Jun. 2019 – Aug. 2019
- Built a real-time OLAP system for the Seven Knights game, enabling real-time processing of big streaming data.

Publications

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

[M3] **Development and External Validation of a Transformer-Based Cardiac Arrest Prediction System for General Ward Patients: A Multicenter Study**
Sungsoo Hong*, Kyung Hyun Lee*, Yechan Mun*, Sangchul Hahn, Sunguk Jang, **Changhun Kim**, Yuhyun Choi, Kyung Soo Chung, Kang-Mo Gu, Hae In Jung, Tae Wan Kim, Moon Seong Baek, Taeyong Sim
Under Review at Artificial Intelligence in Medicine, 2026

[M2] **SPAM: Sampling Pattern Meta-Learning for Domain Generalization on Irregular Time Series**
Changhun Kim, Joohyung Lee, Kwanhyung Lee, Donghwee Yoon, Eunho Yang
Manuscript, 2025

[M1] **ReviewScore: Misinformed Peer Review Detection with Large Language Models**
Hyun Ryu, Doohyuk Jang, Hyemin S. Lee, Joonhyun Jeong, Gyeongman Kim, Donghyeon Cho, Gyouk Chu, Minyeong Hwang, Hyeongwon Jang, **Changhun Kim**, Hae Chan Kim, Joowon Kim, Yoonjeon Kim, Kwanhyung Lee, Chanjae Park, Heecheol Yun, Gregor Betz, Eunho Yang
Manuscript, 2025

[C7] **Delta-XAI: A Unified Framework for Explaining Prediction Changes in Online Time Series Monitoring**
Changhun Kim*, Yechan Mun*, Hyeongwon Jang, Eunseo Lee, Sangchul Hahn, Eunho Yang
*International Conference on Learning Representations (**ICLR**)*, 2026

[C6] **Soft Equivariance Regularization for Invariant Self-Supervised Learning**
Joohyung Lee, **Changhun Kim**, Hyunsu Kim, Kwanhyung Lee, Juho Lee
*International Conference on Learning Representations (**ICLR**)*, 2026

[C5] **Position Paper: How Should We Responsibly Adopt LLMs in the Peer Review Process?**
Juhwan Choi, JungMin Yun, **Changhun Kim**, YoungBin Kim
*Conference of the European Chapter of the Association for Computational Linguistics (**EACL**)*, 2026 (Findings)

[C4] **TIMING: Temporality-Aware Integrated Gradients for Time Series Explanation**
Hyeongwon Jang*, **Changhun Kim***, Eunho Yang
*International Conference on Machine Learning (**ICML**)*, 2025 (**Spotlight, 313/12,107=2.6%**)
ICLR Workshop on XAI4Science, 2025
CIKM Workshop on Human-Centric AI, 2025 (**Best Paper Award**)

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

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

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

[W2] **DeltaSHAP: Explaining Prediction Evolutions in Online Patient Monitoring with Shapley Values**
Changhun Kim*, Yechan Mun*, Sangchul Hahn, Eunho Yang
ICML Workshop on Actionable Interpretability, 2025

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

Patents

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

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

Awards and Honors

Best Paper Award, CIKM 2025 Workshop on Human-Centric AI — Nov. 2025
Top Reviewer (206/10,943=1.9%), ICML 2025 — May 2025
Dongwon Full Master's Scholarship, Dongwon Group — Spring 2022 – Fall 2023
Silver Prize, Korean Undergraduate Mathematics Competition — Jan. 2022
National Full Undergraduate Scholarship, Korea Student Aid Foundation (KOSAF) — Spring 2017 – Fall 2021
KAIST Convergence AMP Scholarship, KAIST School of Computing — Mar. 2019

Teaching Experience

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

Mentoring Experience

Vishal Srivastava, Ph.D. Student at NUS — Aug. 2025 – Present
Hyeongwon Jang, Ph.D. Student at KAIST — Oct. 2024 – Present
Wooseok Han, Researcher at AITRICS — Mar. 2024 – Nov. 2024
Taewon Kim, Undergraduate Researcher at KAIST — Mar. 2023 – Nov. 2023
Sungwoo Cho, Undergraduate Researcher at KAIST — Sept. 2022 – Apr. 2023

Academic Service

Journal Reviewer

Transactions on Machine Learning Research (**TMLR**) — 2024 – Present
IEEE Transactions on Neural Networks and Learning Systems (**TNNLS**) — 2024 – Present

Conference Reviewer

Conference on Neural Information Processing Systems (**NeurIPS**) — 2024
International Conference on Machine Learning (**ICML**) — 2025 – 2026
International Conference on Learning Representations (**ICLR**) — 2025 – 2026
International Conference on Artificial Intelligence and Statistics (**AISTATS**) — 2026
AAAI Conference on Artificial Intelligence (**AAAI**) — 2026
International Joint Conference on Artificial Intelligence (**IJCAI**) — 2025 – 2026
Annual Meeting of the Association for Computational Linguistics (**ACL**) — 2025 – 2026
Conference on Empirical Methods in Natural Language Processing (**EMNLP**) — 2025
IEEE International Conference on Acoustics, Speech, and Signal Processing (**ICASSP**) — 2025 – 2026
Learning on Graphs Conference (**LoG**) — 2024 – 2025

Skills

Programming: Python, C, Java, JavaScript, SQL, Bash, LaTeX, PyTorch
Languages: Korean (Native), English (Fluent)