Changhun Kim

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Research Interests

Generalizable Deep Learning: Test-Time Adaptation, Meta-Learning, {Zero, Few}-Shot Learning
Generative Models: Diffusion Models, Large Language Models, Text-to-{Image, 3D, Speech} Generation
Statistical Machine Learning: Bayesian Machine Learning, Generalization Bounds, PAC-Bayes Analysis

Education

Korea Advanced Institute of Science and Technology (KAIST) Daejeon, South Korea
Master of Science in Artificial Intelligence (Advisor: Prof. Eunho Yang) Mar. 2022 – Feb. 2024
- Thesis: Test-Time Adaptation for Automatic Speech Recognition via Sequential-Level Generalized Entropy Minimization
- GPA: 4.25/4.3, 4.0/4.0, 99.5% (Department Salutatorian, Top 0.7% of all Departments)

Bachelor of Science in Computer Science and Mathematics (Double Major) Mar. 2017 – Feb. 2022
- GPA: 3.92/4.3, 3.81/4.0, 96.2% (Top 9% in the Department)

Publications

C: Conference, P: Preprint, *: Equal Contribution

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

[P2] **CloudFixer: Test-Time Adaptation for 3D Point Clouds via Diffusion-Guided Geometric Transformation**
Hajin Shim*, **Changhun Kim*** and Eunho Yang
Under Review

[P1] **Stable-TTS: Stable Speaker-Adaptive Text-to-Speech Synthesis via Prosody Prompting under Limited Target Samples**
Wooseok Han*, Minki Kang*, **Changhun Kim** and Eunho Yang
Under Review

Research Experience

AITRICS Seoul, South Korea
Machine Learning Researcher (Advisor: Prof. Eunho Yang) Nov. 2023 – Present
- Conduct research on enhancing the accuracy and robustness of predictive models for cardiac arrest and major adverse events in hospitals with electronic health records.

KAIST Machine Learning and Intelligence Lab Daejeon, South Korea
Master's Student (Advisor: Prof. Eunho Yang) Mar. 2022 – Feb. 2024
- Explore modality-specific test-time adaptation strategies to mitigate data distribution shifts on diverse tasks, such as 3D point cloud classification, zero-shot transfer of vision-language models, automatic speech recognition, and tabular classification.

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

KAIST Vehicular Intelligence Lab Daejeon, South Korea
Undergraduate Researcher (Advisor: Prof. Dongsoo Har) Oct. 2019 – Aug. 2020
- Research on deep reinforcement learning for AI soccer and develop a block coding system to automatically generate rule-based and deep learning strategies for AI soccer.

Work Experience

Summary.ai Daejeon, South Korea
Developer Intern (Advisor: Prof. Il-Chul Moon) Sep. 2021 – Jan. 2022
- Build backend systems for scraping and storing financial, stock price, and news data into databases.

DeepNatural Seoul, South Korea
Machine Learning Engineer Intern Sep. 2020 – Feb. 2021
- Construct diverse machine learning systems, including speaker verification and diarization framework, Duchenne smile classifier, and medical product recommender system.

Netmarble Seoul, South Korea
Data Engineer Intern Jun. 2019 – Aug. 2019
- Develop log-based real-time OLAP service for Seven Knights mobile game.

Honors

Scholarships

Dongwon Full Masters Scholarship, Dongwon Group — 2022 – 2024
Overseas Exchange Scholarship, Mirae Asset — Dec. 2019
KAIST Convergence AMP Scholarship, KAIST School of Computing — Mar. 2019
National Full Undergraduate Scholarship, Korea Student Aid Foundation — 2017 – 2022

Awards

Best Member for 2022-2023, KAIST Machine Learning and Intelligence Lab — Jul. 2023
Magna Cum Laude, KAIST School of Computing — Feb. 2022
Silver Prize, Korean Undergraduate Mathematics Competition, Korean Mathematics Society — Jan. 2022
Representative of Student Exchange Ambassador, KAIST — Nov. 2019
Honor Student, KAIST College of Engineering — Sep. 2019
Winner, Science Quiz, KAIST-POSTECH Science War — Sep. 2018

Patents

Test-Time Adaptation for Automatic Speech Recognition via Sequential-Level Generalized Entropy Minimization
Eunho Yang, **Changhun Kim**, Joonhyung Park and Hajin Shim
Patents in United States and South Korea (Pending)

Skills

Programming Skills

Programming Languages: Python, C/C++, Java, JavaScript, SQL
Libraries/Frameworks: PyTorch, TensorFlow, Node.js, Android Studio

Languages

Advanced in English and Native in Korean