

ChangHeon Han

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Research Interests

Multimodal Learning, Signal Processing, Natural Language Processing, Music Information Retrieval

Professional Experience

- Chalmers University of Technology** | *Ph.D. Student* 01 2026 – Present
- Affiliated with WASP-HS (Wallenberg AI, Autonomous Systems and Software Program – Humanity and Society)
 - Research focus: learned cultural representation spaces in generative AI for creative domains
 - Advisor: Kivanc Tatar (Associate Professor)
- Singapore Management University** | *Research Engineer* 10 2025 – 12 2025
- Career Trajectory Analysis using Dynamic GNN
 - Advisor: Ee-peng Lim (Professor), Palakorn Achananuparp (Senior Research Scientist)
- SONY Europe** | *Research Intern* 08 2024 – 01 2025
- Researched fine-grained instrument music source separation using text queries, leveraging a text-audio multimodal encoder to enable zero-shot separation with hierarchical instrument representations
 - Advisor: Giorgio Fabbro (Engineer, Sony), Axel Marmoret (Maître de conférences, IMT Atlantique)
- Hanyang University** | *Research Assistant* 02 2023 – 07 2024
- Built a preprocessing pipeline for polysomnography audio recordings for sleep apnea diagnosis using respiratory sound patterns
 - Explored caption augmentation techniques for Text-to-Audio generation models to synthesize ASMR content with improved semantic alignment
 - Advisor: Minsam Ko (Associate Professor)
- GIST (Gwangju Institute of Science and Technology)** | *Research Intern* 01 2023 – 02 2023
- Researched symbolic domain generation based on a four-quadrant emotion model, tailored to the current emotions of video game players
 - Advisor: Kyung-Joong Kim (Professor)
- Coupang** | *Data Analyst* 04 2020 – 04 2022
- Managed a team of 5 to cleanse misdelivered address data, collaborating with the development team to create an address override system
 - Led a team of 3 to develop a cleansing process for preventing personal information breaches in the system, including ongoing training and management
- Music Producer** | *Music Producer / Singer-Songwriter* 01 2018 – 2022
- Worked as a producer on Hyundai Motor Group official media and the Seezn Original Series Hope or Dope, producing 10 tracks for 5 artists and registering 33 copyrighted works
 - As an artist, released music featured in Spotify K-pop Editorial Playlists (4 tracks), reaching over 800K streams across 96 countries

Publication

ChangHeon Han and SuHyun Lee, "Optimizing Music Source Separation in Complex Audio Environments Through Progressive Self-Knowledge Distillation", *Technical Report of 2024 IEEE International Conference on Acoustics, Speech, and Signal Processing Workshops (ICASSPW)* [[pdf](#)] [[code](#)] [[presentation-ppt](#)]

ChangHeon Han, Jaemyung Shin and Minsam Ko, "ASMR Sound Generation through Attribute-based Prompt Augmentation", *Korea Computer Congress 2024 (KCC)* [[pdf](#)] [[poster](#)]

ChangHeon Han, SuHyun Lee and MinSam Ko, "Track Role Prediction of Single-Instrumental Sequences", *Late Breaking/Demo (LBD) of 24th International Society for Music Information Retrieval Conference (ISMIR)* [[pdf](#)] [[code](#)] [[poster](#)]

SuHyun Lee, **ChangHeon Han**, Woohwan Jung and Minsam Ko "STAR: Strategy-Aware Refinement Module in Multitask Learning for Emotional Support Conversations", *In Proceedings of the Fourth Workshop on NLP for Positive Impact, Association for Computational Linguistics* [pdf] [code]

SuHyun Lee, **ChangHeon Han** "Sentimatic: Sentiment-guided Automatic Generation of Preference Datasets for Customer Support Dialogue System", *In Proceedings of the 2025 Conference of the Nations of the Americas Chapter of the Association for Computational Linguistics* [pdf] [code]

Projects

Hybrid Demucs with Self-Knowledge Distillation | Python, Signal Processing, HRTF

- Applied Progressive Self-Knowledge Distillation (PS-KD) to fine-tune the Hybrid Demucs baseline model on stereo-mixed music with HRTF characteristics for the Cadenza Challenge 2024; ranked in the Top 5 globally.

MIDI-Metadata-Extractor | Python, music21, PrettyMIDI, Mido

- This tool segregates break down a multi-track MIDI file into individual instrument tracks, extract detailed metadata for each track, and provides the flexibility to truncate and save tracks based on a specified number of measures.

NSynth-MIDI-Renderer for massive MIDI dataset | Python, NSynth, MIDI-Synthesizer

- This project, done as an open-source contribution, involves a given MIDI sequence undergoing a process of finding and assigning candidates in the NSynth dataset to lock in a single preset from the beginning to the end of the sequence.

Respiration Count Algorithm Utilizing Peak Detection | Python, PSG-Audio, Signal Processing

- Implemented a code that calculates breath count by creating a power envelope from the amplitude values of a spectrogram with noise filtering. The method expresses inhalation and exhalation as a single curve through Gaussian filter smoothing.

Soothing Sound White Noise Generator | copyrighted with the Korea Copyright Commission

- Developed a soothing sound audio generation program, featuring a noise creation tool with five distinct noise colors and three weighting filters.

Activities

Munich Music Labs | Manager

11 2025 - Present

- Served as Partnership Manager, supporting research collaborations and industry partnerships.

Hanyang University | Teaching Assistant

03 2024 - 06 2024

- Creative Programming for Engineers: Assisted engineering students with their Python coding practices.

Education

Chalmers University of Technology | Ph.D. in Computer Science and Engineering

01 2026 - Present

Hanyang University | Master of Artificial Intelligence

03 2023 - 02 2025

Korea SMEs and Startups Agency | ML/AI Training Program

04 2022 - 12 2022

SoongSil University | Bachelor of Laws

2011 - 2020

Honors and Awards

Hanyang University: Fully funded Master's position, including conference travel support.

Korea SMEs and Startups Agency: Received full tuition support for a 10-month program.

References

Kivanc Tatar Associate Professor, Chalmers University of Technology, tatar@chalmers.se

Minsam Ko Associate Professor, Hanyang University, minsam@hanyang.ac.kr

Axel Marmoret Maître de conférences, IMT Atlantique, axel.marmoret@imt-atlantique.fr

Giorgio Fabbro Engineer, SONY, Giorgio.Fabbro@sony.com

Ee-peng Lim Professor, SMU, eplim@smu.edu.sg

Palakorn Achananuparp Senior Research Scientist, SMU, palakorna@smu.edu.sg