EUNJIN CHOI

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Curriculum Vitae (Last update: October 19, 2026)

RESEARCH INTERESTS

Representation Learning, Generative Models, Multimodal Learning, Music Information Retrieval

I'm interested in representation learning and controllable generation for sequential and structured data, with experience in dataset construction, preprocessing, and Transformer- and diffusion-based models. My work has focused on symbolic music data, exploring various structured representations such as tokenized sequences, matrices for music generation and understanding. Ultimately, I want to help machines better understand the structures and patterns in human-created data, while deepening my own understanding of the data, model, and the learning process itself.

TECHNICAL STRENGTHS

Dataset Collection & Filtering – Built small and large-scale datasets from raw binary game sound chip commands (YM2413-MDB) and web-scraped audio (PIAST). Led large-scale dataset de-duplication.

Data Representation & Preprocessing – Experienced with various symbolic sequence tokenization schemes, matrix/graph transformations, and multi-modal alignment pipelines.

Model Development – Implemented Transformer and Discrete Diffusion models for controllable generation.

SELECTED PUBLICATIONS

D3PIA: A Discrete Denoising Diffusion Model for Piano Accompaniment Generation from Lead Sheet
Eunjin Choi, Hounsu Kim, Hayeon Bang, Taegyun Kwon, Juhan Nam [paper] [demo] [code]
2026 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2026

- Developed a discrete diffusion model for predicting the note state in piano roll generation, achieving 80% adherence to specified chord progressions in piano accompaniment generation.

On the De-duplication of the Lakh MIDI Dataset
Eunjin Choi, Hyerin Kim, Jiwoo Ryu, Juhan Nam, Dasaem Jeong [paper] [demo] [code]
Proceedings of the 25th International Society for Music Information Retrieval Conference (ISMIR), 2025

- Led embedding-based de-duplication of a large-scale music dataset, identifying 21% of the data as redundant.

PianoBind: A Multi-modal Joint Embedding Model for Pop-piano Music
Hayeon Bang, **Eunjin Choi**, Seungheon Doh, Juhan Nam [paper] [demo] [code]
Proceedings of the 26th International Society for Music Information Retrieval Conference (ISMIR), 2025

- Implemented temporally aligned preprocessing for audio and structured musical event sequences (MIDI), and developed the MIDI encoder for joint text–audio–MIDI representation learning.

YM2413-MDB: A Multi-Instrumental FM Video Game Music Dataset with Emotion Annotations
Eunjin Choi, Yoonjin Chung, Seolhee Lee, Jong Ik Jeon, Taegyun Kwon, Juhan Nam [paper] [demo] [code]
Proceedings of the 23rd International Society for Music Information Retrieval Conference (ISMIR), 2022

- Constructed a music dataset by decoding binary sound-chip commands, defined emotion annotation categories, and established a GPT-2 baseline for conditional generation.

More Publication @ `https://scholar.google.com/citations?user=3VWIf88AAAAJ`

EDUCATION

Ph.D. in Culture Technology Mar. 2022 – Aug. 2026
Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea
Thesis: Neural Song Identification and Arrangement in Symbolic Music
Advisor: Juhan Nam

M.S. in Culture Technology Mar. 2020 – Feb. 2022
Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea
Thesis: YM2413-MDB: A Collection of Multi-instrumental Symbolic Music and 1980s FM Music Generation for Video Game
Advisor: Juhan Nam

B.E. in Convergence Mar. 2015 – Feb. 2020
Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, Korea
Graduated magna cum laude

SELECTED RESEARCH PROJECTS

Pop Piano Score Conversion 2025 - 2026
Industry Project with MPAG, South Korea

- Aligned symbolic scores with structural differences and implemented a bidirectional score conversion model

Style-prompted Piano Cover Generation from Pop Music 2022 - 2024
Industry Project with NC Soft, South Korea

- Implemented a pipeline for converting pop music audio into lead sheets using pretrained models and integrating downstream generation models

Research Talent Training Program for Emerging Technologies in Games 2020 - 2022
Culture Technology R&D Program, Ministry of Culture, Sports and Tourism and Korea Creative Content Agency

- Conducted research on game music generation (ISMIR 2022) and developed PC/VR games featuring real-time audio processing and voice pitch estimation

EXPERIENCES

NHN Cloud, South Korea Jan. 2026 – Present
AI/ML Researcher, Recommendation system and Time-series modeling

MPAG, South Korea Jun. 2025 – Aug. 2025
Part-time AI researcher, Piano score difficulty prediction

Neutune, South Korea Jun. 2021 – Sep. 2021
Research intern, Multi-instrumental symbolic music generation

INFINYX, South Korea Jul. 2019 – Aug. 2019
Research intern, Medical image segmentation (gallbladder)

Visual Computing Lab, DGIST, South Korea Jan. 2019 – Feb. 2019
Research intern, Super-resolution and denoising images

UC Berkeley, United States Jun. 2016 – Aug. 2016
Summer Session

AWARDS AND HONORS

NC Scholarship, NCSoft ($7,000 prize) 2022

LANGUAGES, SKILLS, AND INTERESTS

English (fluent), Korean (native)

Python, PyTorch, Kubeflow, and Kserve

C, C++, C#, Unity, VR (Oculus Quest 2)