

Sungkyun Chang

MUSIC AI & INTELLIGENT SYSTEMS · MUSIC PERFORMANCE ASSESSMENT & FEEDBACK

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Education

Seoul National University

M.S. IN ENGINEERING (DIGITAL CONTENTS CONVERGENCE MAJOR)

Seoul, Korea

Sep. 2010 - Aug. 2013

- Graduate School of Convergence Science and Technology
- Thesis: Modeling tonal tension in music signals
- Advisor: Dr. Kyogu Lee 🧑

Seoul National University

B.M. IN MUSIC COMPOSITION

Seoul, Korea

Mar. 1999 - Feb. 2008

- College of Music
- Advisor: Prof. Donoung Lee 🧑

Research Interests

MUSIC PERFORMANCE ASSESSMENT & INTELLIGENT FEEDBACK

- Fine-grained, score-aligned music performance assessment at note-, bar-, and phrase-level
- Distinguishing expressive intent from performance deficiencies via score-conditioned deviation modelling
- Human-centred, rubric-guided feedback generation with expert-in-the-loop refinement (RLHF)

MUSIC AI: GENERATIVE MODELLING & AUDIO REPRESENTATION

- Automatic music transcription and multimodal learning across audio, score, and text
- Audio/symbolic hybrid modelling for music generation

Honors & Awards

COMPETITION

2025	Winner , Music Tech Hackathon, Music Hackspace – thatsoundlike.me	<i>London, UK</i>
2025	Winner , AES AIMLA Query by Vocal Imitation Challenge	<i>London, UK</i>
2025	2nd Place , IEEE ICME Automatic Music Transcription Challenge	<i>Nantes, France</i>
2019	Top 3 , WSDM Cup 2019: Spotify Sequential Skip Prediction Challenge	<i>Melbourne, AUS</i>
2018	Winner , MIREX 2018: Audio Cover Song Identification	<i>Paris, France</i>
2018	Finalist , WWW 2018 Challenge: Learning to Recognize Musical Genre	<i>Lyon, France</i>
2010	Finalist , Korea Telecom Econovation 1st Fair: iPhone app contest	<i>Seoul, Korea</i>
2007	Invitation , P.Art.y, an international digital art contest, Art Center Nabi	<i>Seoul, Korea</i>
2007	Winner , The 4th Computer Music Contest, Korean Electro-Acoustic Music Society	<i>Seoul, Korea</i>

SCHOLARSHIP

2025	Travel Grant , IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)	<i>Tahoe, USA</i>
2022	TPU Research Cloud (TRC) Grant , Google	
2010-2012	Superior Academic Performance , Seoul National University	
2010-2012	NRF Student Research Grants , National Research Foundation of Korea	

Experience

RESEARCH EXPERIENCE

Centre for Digital Music (C4DM), Queen Mary University of London

London, UK

RESEARCH ASSISTANT, COLLABORATION WITH ABRSM (PI: PROF. SIMON DIXON)

Jun. 2024 - present

- Music Performance Assessment & Feedback (WASPAA 2025)
 - Developing a unified model to predict marks from piano exams and generate text feedback for skill improvement.
 - Addressing key challenges of (1) multimodal representation unifying MusicXML scores, audio, and text, (2) score-to-performance alignment, (3) note mistake detection, and (4) generating feedback.
 - Researching multimodal learning, music in symbolic/audio domain, music transcription, and LLMs applications for music education.
- ImprovNet
 - Co-authored a music generative model for expressive improvisation in the symbolic domain (IJCNN 2025).
 - Proposed a model that iteratively corrupts and refines input sequences to perform controllable melodic/harmonic variations, in-filling, genre transfer, and continuation.

Centre for Digital Music (C4DM), Queen Mary University of London

London, UK

RESEARCH ASSISTANT, HUAWEI COLLABORATION (PI: DR. EMMANOUIL BENETOS)

Jul. 2022 - Dec. 2023

- Collaborated on a research project with two faculty advisors and a project manager from Huawei Europe.
- Developed a multi-instrument automatic music transcription (AMT) model specifically tailored for Pop music.
- YourMT3+
 - Released a PyTorch toolkit enabling efficient multi-task learning and cross-dataset stem augmentation in music data.
 - Addressed key challenges such as (1) the lack of data representing the wide array of styles and instruments in pop music, and (2) working with partial annotations or noisy labels of music recordings.
 - Implemented an enhanced audio encoder using Mixture of Experts and hierarchical transformer (Perceiver), and a multi-stream LM decoder to utilize partially annotated data.
 - Achieved performance improvements across 10 public datasets and pop music recordings. Presented at MLSP 2024.

Cochl.ai

Seoul, S.Korea

RESEARCH SCIENTIST

Apr. 2019 - Jun. 2022

- Developed a neural audio fingerprinting system for large-scale music retrieval using self-supervised contrastive learning (ICASSP 2021); led follow-up deployment of music identification service with SK Telecom FLO.
- Applied self-supervised and meta-learning to sound event detection (SED).

Institute for Industrial System Innovation, Seoul National University

Seoul, Korea

RESEARCHER, COLLABORATION WITH KAKAO AND KAKAO BRAIN

Jun. 2017 - Mar. 2019

- Developed deep learning models for music genre classification (Top 6, WWW 2018), cover song identification (NeurIPS Music AI Workshop 2017, ICASSP 2018), and playlist skip prediction (Top 3, WSDM 2019).

Music and Audio Research Group (MARG), Seoul National University

Seoul, Korea

RESEARCHER, SINGING SYNTHESIS AND EVALUATION (NRF PROJECT)

Jun. 2017 - Apr. 2019

- Developed an end-to-end singing synthesis system (WaveNet/Tacotron2/FFTNet) with speech-to-singing transfer via hierarchical latent space.

RESEARCHER, LYRICS-TO-AUDIO ALIGNMENT (NRF PROJECT)

Aug. 2015 - May. 2017

- Developed an unsupervised lyrics-to-audio alignment method using vowel repetition patterns and NMF-based subspace learning; outperformed ASR-based baselines (IEEE Access).

RESEARCHER, SINGING VOICE ONSET/OFFSET DETECTION (SAMSUNG & MSIT)

Aug. 2013 - Aug. 2015

- Developed a note onset/offset detection method for singing voice using Correntropy; outperformed SOTA (ICASSP 2014).

RESEARCH ASSISTANT, MUSIC DESCRIPTOR EXTRACTION & LYRICS ALIGNMENT (NAVER)

Aug. 2010 - Feb. 2014

- Developed algorithms for instrumentation analysis and singer gender classification (supervised NMF); implemented semi-supervised NMF + DTW-based lyrics-to-audio alignment.

Center for Arts & Technologies (CATSNU), Seoul National University

Seoul, Korea

RESEARCHER

Feb. 2006 - Aug. 2010

- 9 collaborative works of new media art, sound installation, and live electro-acoustics; including iHEAB/Hansori (Haus der Kulturen der Welt, Berlin, 2006) and MixPlore (HMM-based gesture recognition).

SELECTED PROFESSIONAL EXPERIENCE

EmotionWave 🏠

Seoul, Korea

CMTO

Jan. 2024 - May. 2024

- Led a team in the deployment of music generative models and transcription models for a music metaverse framework.

10th Audio Art Festival, Korea

Seoul, Korea & Cracow, Poland

CO-DIRECTOR

2003

- Co-directed an international experimental music festival in collaboration with the Academy of Music in Cracow.

CONFERENCE & WORKSHOP PAPERS

OmnivideoBench: Towards Audio-Visual Understanding Evaluation for Omni MLLMs

C. Li, Y. Chen, Y. Ji, J. Xu, Z. Cui, S. Li, Y. Zhang, W. Wang, Z. Song, D. Zhang, Sungkyun Chang, et.al.
International Conference on Learning Representations (ICLR), 2026

CMI-RewardBench: Evaluating Music Reward Models with Compositional Multimodal Instruction

Y. Ma, H. Xia, H. Gao, W. Chen, Y. Ye, Y. Yang, Sungkyun Chang, M. Ding, Y. Li
arXiv preprint arXiv:2603.00610, 2026

ImprovNet: Generating Controllable Musical Improvisations with Iterative Corruption Refinement

Keshav Bhandari, Sungkyun Chang, Tongyu Lu, Fareza Enus, Louis B. Bradshaw, Dorien Herremans, Simon Colton
International Joint Conference on Neural Networks (IJCNN), 2025

RUMAA: Repeat-Aware Unified Music Audio Analysis for Score-Performance Alignment, Transcription, and Mistake Detection

Sungkyun Chang, Simon Dixon, Emmanouil Benetos
2025 IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA), Lake Tahoe, USA, 2025

Advancing Multi-Instrument Music Transcription: Results from the 2025 AMT Challenge

O. Chaturvedi, K. Bhardwaj, T. Gondil, B.S.H. Chou, Y. Yan, K.Y.J. Yun, Y.H. Lu, Sungkyun Chang
NeurIPS Workshop on AI for Music, 2025

YourMT3+: Multi-instrument Music Transcription with Enhanced Transformer Architectures and Cross-dataset Stem Augmentation

Sungkyun Chang, Emmanouil Benetos, Holger Kirchhoff, Simon Dixon
IEEE International Workshop on Machine Learning for Signal Processing (MLSP), London, UK, 2024

YourMT3: a toolkit for training multi-task and multi-track music transcription model for everyone

Sungkyun Chang, Emmanouil Benetos, Simon Dixon
Digital Music Research Network One-day Workshop (DMRN+17), 2022

Neural audio fingerprint for high-specific audio retrieval based on contrastive learning

Sungkyun Chang, Donmoon Lee, Jeongsoo Park, Hyungui Lim, Kyogu Lee, Karam Ko, Yoonchang Han
2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Toronto, Canada, 2021

Sequential skip prediction with few-shot in streamed music contents

Sungkyun Chang, Seungjin Lee, Kyogu Lee
WSDM Cup Workshop, 12th ACM International Conference on Web Search and Data Mining (WSDM), Melbourne, Australia, 2019

Cover song identification using song-to-song cross-similarity matrix with convolutional neural network

Juheon Lee, Sungkyun Chang, Sang Keun Choe, Kyogu Lee
2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Calgary, Alberta, Canada, 2018

Covernet: cover song identification using cross-similarity matrix with convolutional neural network

Juheon Lee, Sungkyun Chang, Donmoon Lee, Kyogu Lee
Music Information Retrieval Evaluation eXchange (MIREX), 2018

Audio cover song identification using convolutional neural network

Sungkyun Chang, Juheon Lee, Sang Keun Choe, Kyogu Lee
Machine Learning for Audio Workshop, Neural Information Processing Systems (NeurIPS 2017), Long Beach, CA, USA, 2017

A pairwise approach to simultaneous onset/offset detection for singing voice using correntropy

Sungkyun Chang, Kyogu Lee
2014 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Florence, Italy, 2014

Saliency-driven model for perceptual audio onset detection

Sungkyun Chang, Kyogu Lee
The 13th International Conference on Music Perception and Cognition (ICMPC), Seoul, 4-8th August, 2014

The Korean traditional music ontology (KTMO)- an ontology for the Korean traditional music linked data

Souhwan Choe, Yongtae Hwang, Sungkyun Chang, Mikyoung Kim
The 3rd International Conference on Internet (ICONI 2011), Sepang, Malaysia, December 15-19, 2011, 2011

MixPlore: a cocktail-based media performance using tangible user interfaces

Zune Lee, Sungkyun Chang, Chang Young Lim
International Conference on Arts and Technology, Yilan, Taiwan, 2009

JOURNALS

Lyrics-to-audio alignment by unsupervised discovery of repetitive patterns in vowel acoustics

Sungkyun Chang, Kyogu Lee
IEEE Access 5 (2017) PP. 16636–16648. IEEE, 2017

Classification of smartphone games based on mechanics

Yeonbi Chun, Sungkyun Chang, Tack Woo
Journal of Korea Game Society 12.6 (2012) PP. 15–24. KOREA GAME SOCIETY, 2012

MixPlore: a digital performance using tangible user interfaces based on cocktail mixology

Zune Lee, Sungkyun Chang, Chang Young Lim
International Journal of Arts and Technology 4.2 (2011) PP. 133–154. INDERSCIENCE PUBLISHERS, 2011

Academic Service

PROGRAM COMMITTEE

2026 **Program Committee**, AAAI Workshop on Emotion AI in Music (EAIM)

REVIEWER

- 2026- **Reviewer**, IEEE Open Journal of Signal Processing
- 2025- **Reviewer**, Transactions of the International Society for Music Information Retrieval (TISMIR)
- 2025- **Reviewer**, IEEE International Conference on Multimedia and Expo (ICME)
- 2023- **Reviewer**, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)
- 2023- **Reviewer**, IEEE/ACM Transactions on Audio, Speech, and Language Processing
- 2022- **Reviewer**, IEEE Signal Processing Letters
- 2021- **Reviewer**, International Society for Music Information Retrieval (ISMIR)
- 2018- **Reviewer**, IEEE Access

Memberships

- 2019- **Member**, Association for Computing Machinery
- 2014- **Member**, IEEE Signal Processing Society
- 2014- **Member**, International Society for Music Information Retrieval
- 2007- **Member**, Korea Electro-Acoustic Music Society

Patents

Method and apparatus for generating music fingerprints

Karam Ko, Seungjin Lee, Sungkyun Chang, Yoonchang Han, Subin Lee, Donmoon Lee, Jungsoo Park, Ilyoung Jeong, Hyungui Lim
[KR Patent No.10202020113961 \(2021\). SK TELECOM AND COCHLEAR.AI, 2021](#)

Apparatus and method script and scene aligning for multimedia sorting, analyzing and tagging

Sejun Kwon, Yoonchang Han, Sungkyun Chang, Kyogu Lee
[KR Patent No.1020140017363 \(2014\). SEOUL NATIONAL UNIVERSITY R&DB FOUNDATION, 2014](#)

Real-time musical performance feedback system for beginner musician

Sejun Kwon, Yoonchang Han, Sungkyun Chang, Kyogu Lee
[KR Patent No.20150034959A \(2013\). SEOUL NATIONAL UNIVERSITY R&DB FOUNDATION, 2013](#)

Skills

- Programming** Proficient in PyTorch/TensorFlow; Audio DSP programming with C, C++, Matlab, \LaTeX
- Music** Music Theory, Music Arrangement & Production, Piano, Electric bass, Perfect Pitch
- Languages** Korean (native), English