

Curriculum Vitae

Sungho Lee

Personal Info

Affiliation Ph.D. candidate, Music and Audio Research Group, Seoul National University.

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Research Interest Inverse problems; differentiable processing and generative models; audio post-production.

Publications

Journal Articles

- [J1] Differentiable Acoustic Radiance Transfer
Sungho Lee, Matteo Scerbo, Seungu Han, Min Jun Choi, Kyogu Lee, and Enzo De Sena
IEEE Transactions on Audio, Speech, and Language Processing (TASLPRO), 2026 [arXiv](#)
- [J2] Reverse Engineering of Music Mixing Graphs with Differentiable Processors and Iterative Pruning
Sungho Lee, Marco A. Martínez-Ramírez, Wei-Hsiang Liao, Stefan Uhlich, Giorgio Fabbro, Kyogu Lee, and Yuki Mitsufuji
Journal of Audio Engineering Society (JAES), 2025 [jaes](#) [arXiv](#)
- [J3] Differentiable Artificial Reverberation
Sungho Lee, Hyeong-Seok Choi, and Kyogu Lee
IEEE/ACM Transactions on Audio, Speech, and Language Processing (TASLP), 2022 [demo](#) [arXiv](#)

Conference Papers

- [C1] Exploring the Design Space of Representation Learning for Audio Transformations
Sungho Lee, Marco A. Martínez-Ramírez, Junghyun Koo, Wei-Hsiang Liao, Kyogu Lee, and Yuki Mitsufuji
International Society for Music Information Retrieval Conference (ISMIR), 2026
- [C2] Rethinking Speech Representation Aggregation in Speech Enhancement: A Phonetic Mutual Information Perspective
Seungu Han, Sungho Lee, and Kyogu Lee
IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2026 [arXiv](#)
- [C3] Few-step Adversarial Schrödinger Bridge for Generative Speech Enhancement
Seungu Han, Sungho Lee, Juheon Lee, and Kyogu Lee
ISCA Interspeech (Best student paper award nominee), 2025 [arXiv](#)
- [C4] TokenSynth: A Token-based Neural Synthesizer for Instrument Cloning and Text-to-Instrument
Kyungsu Kim, Junghyun Koo, Sungho Lee, Haesun Jeong, and Kyogu Lee
IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2025 [demo](#) [arXiv](#) [code](#)
- [C5] Searching for Music Mixing Graphs: A Pruning Approach
Sungho Lee, Marco A. Martínez-Ramírez, Wei-Hsiang Liao, Stefan Uhlich, Giorgio Fabbro, Kyogu Lee, and Yuki Mitsufuji
International Conference on Digital Audio Effects (DAFx) (Best show & tell award), 2024 [demo](#) [arXiv](#) [code](#)
- [C6] Emosical: An Emotion-Annotated Musical Theatre Dataset
Hayoon Kim, Ahyeon Choi, Sungho Lee, Hyunjin Jung, and Kyogu Lee
Conference on Empirical Methods in Natural Language Processing (EMNLP), Findings, 2024 [ACL](#) [code](#)
- [C7] Yet Another Generative Model for Room Impulse Response Estimation
Sungho Lee, Hyeong-Seok Choi, and Kyogu Lee
IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA), 2023 [demo](#) [arXiv](#)
- [C8] Blind Estimation of Audio Processing Graph
Sungho Lee, Jaehyun Park, Seungryeol Paik, and Kyogu Lee
IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2023 [demo](#) [arXiv](#)
- [C9] Exploiting Time-Frequency Conformers for Music Audio Enhancement
Yunkee Chae, Junghyun Koo, Sungho Lee, and Kyogu Lee
ACM International Conference on Multimedia (ACM MM), 2023 [demo](#) [arXiv](#) [code](#)

[C10] Global HRTF Interpolation via Learned Affine Transformation of Hyper-Conditioned Features
Jin Woo Lee, Sungho Lee, and Kyogu Lee
IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2023 [demo](#) [arXiv](#) [code](#)

Workshop & Demo Papers

- [W1] GRAFX: An Open-Source Library for Audio Processing Graphs in PyTorch
Sungho Lee, Marco A. Martínez-Ramírez, Wei-Hsiang Liao, Stefan Uhlich, Giorgio Fabbro, Kyogu Lee, and Yuki Mitsufuji
International Conference on Digital Audio Effects (DAFx), Demo, 2024 [arXiv](#) [code](#) [documentation](#)
- [W2] Wavespace: A Highly Explorable Wavetable Generator
Hazounne Lee, Kihong Kim, Sungho Lee, and Kyogu Lee
International Society for Music Information Retrieval Conference (ISMIR), Late-Breaking Demo, 2024 [arXiv](#) [code](#)
- [W3] Beat-Aligned Spectrogram-to-Sequence Generation of Rhythm-Game Charts
Jayeon Yi, Sungho Lee, and Kyogu Lee
International Society for Music Information Retrieval Conference (ISMIR), Late-Breaking Demo, 2023 [demo](#) [arXiv](#) [code](#)

Patents

- [P1] Multi-modal Guitar Performance Transcription Apparatus and Method for the same
Kyogu Lee, Sungho Lee, Chang-Bin Jeon, Jiwon Kim, Jongho Choi, Hayoon Kim, Yong-Ho Kim, and Jang-Woo Lee
Domestic Patent, 2025 [doi](#)

Preprints & Under Review

- [R1] UNISE: Speech Enhancement via Noise-Invariant Learning for Improved Content Preservation
Seungu Han, Sungho Lee, Eungbum Kim, Seaone Ok, and Kyogu Lee
- [R2] Actionable Pronunciation Feedback via Disentangled Speech Representations
Hayoon Kim, Sungho Lee, and Kyogu Lee
- [R3] LipCoder: Voice-Enabled Coding Toolkit
Hayoon Kim, Sungho Lee, Juwhi Kim, Bongwon Suh, and Kyogu Lee
- [R4] Solving Blind Non-linear Forward and Inverse Problem for Audio Applications
Jaehyun Park, Sungho Lee, Hayoon Kim, and Kyogu Lee

Experiences

Academia

1. KAIST, *Postdoctoral Researcher*. Fall 2026–Spring 2027 (expected)

Education

1. Seoul National University, *Integrated M.Sc. & Ph.D.* Fall 2020–Spring 2026
Department of Intelligence and Information.
Thesis: *Solving Inverse Problems of Audio Systems with Differentiable Processing and Generative Modeling*
Advisor: Kyogu Lee kglee@snu.ac.kr
2. Pohang University of Science and Technology, *B.Sc.* Spring 2016–Spring 2020
Department of Creative IT Engineering.

Industry

1. Meta Reality Labs. *Research intern*. Summer 2026
Intelligent mixing for multichannel audio.
- 2a. Sony AI. *Research intern*. Spring 2026
Representation learning for audio transformations. [\[C1\]](#)
- 2b. Sony AI. *Research intern*. Summer 2023
Differentiable signal processing for music mixing. [\[J2\]](#), [\[C5\]](#), [\[W1\]](#)
3. Supertone. *Research intern*. Spring 2023
Impulse response estimation for audio post-production. [\[C7\]](#)
Product: Supertone Air (research, model training & product design). [page](#)

Funded Projects

1. Supertone. *Research lead.* 2024
Universal speech enhancement on full-band audio. [C3]
2. MCST, Korean Gov. *Applicant.* 2022–2023
Deep learning methods for post-production of musical audio. [C8], [C9]
3. IITP, Korean Gov. *Applicant.* 2021–2023
Sound event detection and localization; room acoustics analysis. [J3]
4. Nexen Tire. *Research lead.* 2022
Analysis and learning of noise, vibration, and harshness (NVH) characteristics.
5. Stra. *Research lead.* 2022
Real-time audiovisual guitar tablature transcription. [P1]

Invited Talks

1. Institute of Sound Recording (IoSR), University of Surrey. Aug. 3, 2026
Solving Inverse Problems of Audio Systems: Inductive Biases, Data, and Scale.
2. Music and AI Lab, National Taiwan University. Oct. 7, 2024
Inverse Problems in Audio Post-production.
3. Center for Digital Music (C4DM), Queen Mary University of London. Nov. 16, 2023
Deep Learning Meets Audio Processing Graphs.

Teaching

1. Data Science Program, Samsung. *Teaching Assistant.* 2021–2022
2. Machine Listening, Seoul National University. *Teaching Assistant.* 2021

Reviews

1. IEEE Transactions on Audio, Speech, and Language Processing (TASLPRO) 2025–
2. EURASIP Journal on Audio, Speech, and Music Processing (JASM) 2025–
3. Journal of Audio Engineering Society (JAES) 2025–
4. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2025–
5. IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA) 2025–
6. IEEE International Joint Conference on Neural Networks (IJCNN) 2025–
7. International Conference on Digital Audio Effects (DAFx) 2026
8. International Society for Music Information Retrieval Conference (ISMIR) 2026
9. ISCA Interspeech 2026
10. IEEE Spoken Language Technology Workshop (SLT) 2026
11. Korean Society for Music Informatics Conference (KSMI) 2026