Jin Woo Lee

✉ jinwlee@snu.ac.kr ● 🌐 jin-woo-lee.github.io ● in jin-woo-lee-8867101b9
🐦 szin94 ● ⌂ jin-woo-lee ● Last updated on November 9, 2024

Current Positions

Research Scientist Intern, *Meta, Reality Labs Research*   Redmond, WA, 2024 – Present

Education

Ph.D. in Intelligence and Information, *Seoul National University (SNU)*   2019 – 2024
Thesis: *Physical Modeling for String Instrument Sound Synthesis based on Finite-difference Scheme and Automatic Differentiation*
Advisor: Kyogu Lee

B.Sc. in Mechanical Engineering, *Pohang University of Science and Technology (POSTECH)* 2013 – 2019
Thesis: *Deep Learning Approach in Multi-scale Prediction of Turbulent Mixing-layer*

Previous Positions

Research Scientist Intern, *Meta* (with Sebastian Prepeliță)   Redmond, WA, 2024
Research Scientist Intern, *Supertone* (with Hyeong-Seok Choi)   Seoul, KR, 2021,2023
Research Intern, *Music and Audio Research Group, SNU*   2019
Research Intern, *Robotics Lab, POSTECH*   2018
Research Intern, *Flow Physics & Engineering Lab, POSTECH*   2017
Visiting Student, *Korea National University of Arts*   2014

Publications [Google Scholar] [h5-index: Engineering & Computer Sci. / AI / Acoustics & Sound]

Selected publications are highlighted.

2024

1. *Differentiable Modal Synthesis for Physical Modeling of Planar String Sound and Motion Simulation*
   Jin Woo Lee, Jaehyun Park, Min Jun Choi, and Kyogu Lee
   NeurIPS 2024

2. *Inverse Nonlinearity Compensation of Hyperelastic Deformation in Dielectric Elastomer for Acoustic Actuation*
   Jin Woo Lee, Gwangseok An, Jeong-Yun Sun, and Kyogu Lee
   IEEE Access 2024

3. *String Sound Synthesizer on GPU-accelerated Finite Difference Scheme* [code]
   Jin Woo Lee, Min Jun Choi, and Kyogu Lee
   ICASSP 2024

2023

4. *AECSQI: Referenceless Acoustic Echo Cancellation Measures using Speech Quality and Intelligibility Improvement* [slides]
   Jin Woo Lee, Hyeong-Seok Choi, and Kyogu Lee
   WASPAA (Oral Presentation) 2023

5. *Neural Fourier Shift for Binaural Speech Rendering* [code]
   Jin Woo Lee and Kyogu Lee
   ICASSP 2023

6. *Global HRTF Interpolation via Learned Affine Transformation of Hyper-conditioned Features* [code]
   Jin Woo Lee, Sungho Lee, and Kyogu Lee
   ICASSP 2023

2022 and earlier..

7. *Representation Selective Self-distillation and wav2vec 2.0 Feature Exploration for Spoof-aware Speaker Verification* [slides]
   Jin Woo Lee, Eungbeom Kim, Junghyun Koo, and Kyogu Lee
   Interspeech (Oral Presentation) 2022

8. *Deep Learning Approach in Multi-scale Prediction of Turbulent Mixing-layer*
   Jin Woo Lee, Sangseung Lee, and Donghyun You
   arXiv 2019

Teaching

Machine Listening (TA)	SNU M3309.002900
Physical Modeling and Numerical Sound Synthesis (Mentor)	SNU MARG-NSS

Invited Talks

1. *Physics-based Differentiable Sound Rendering and Machine Listening*, University of Iowa, Dept. of Communication Sciences and Disorders Seminar (host: Inyong Choi) — 2024
2. *Differentiable Physical Modeling for Sound Synthesis: From Design to Inverse Problems*, Stanford CCRMA, DSP Seminar (host: Julius O. Smith) — 2024
3. *Differentiable Modal Synthesis for Physical Modeling of Planar String Sound and Motion Simulation*, Korea Advanced Institute of Science & Technology (KAIST), Music and Audio Computing Lab (host: Juhan Nam) — 2024
4. *Towards Sound Synthesis using Physical Modeling and Differentiable Finite Difference Schemes*, SANE Workshop, New York University (NYU) — 2023
5. *Differentiable Finite Difference Schemes for Sound Synthesis*, AIIS Workshop, Seoul National University — 2023
6. *AECSQI: Referenceless Acoustic Echo Cancellation Measures using Speech Quality and Intelligibility Improvement*, WASPAA Oral Presentation — 2023
7. *NFS: Neural Fourier Shift for Binaural Speech Rendering*, Music and Audio Workshop, Seoul National University — 2023
8. *Sound Synthesis and Physical Modeling*, MARG NSS Seminar, Seoul National University — 2023
9. *Neural Fourier Shift for Binaural Speech Rendering*, AIIS Workshop, Seoul National University — 2022
10. *On the Hyperelastic Deformation of Dielectric Elastomer Actuator and its Acoustic Actuation*, Pohang University of Science and Technology (POSTECH) — 2022
11. *HRTF Simulation using Boundary Element Method and Neural Network-based Interpolation*, Electronics and Telecommunications Research Institute (ETRI) — 2022
12. *RSSD: Representation Selective Self-Distillation and wav2vec 2.0 Feature Exploration for Spoof-aware Speaker Verification*, Interspeech Oral Presentation — 2022
13. *Current Challenges in Head-related Transfer Function Simulation*, Electronics and Telecommunincations Research Institute (ETRI) — 2021

Academic Services

Reviewing

International Conference on Learning Representations (ICLR)
International Speech Communication Association (ISCA) Interspeech
IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)

Skills

Programming	C, C++, Python
Frameworks	JAX, PyTorch, TensorFlow, NumPy, SciPy, Pandas
Softwares	Matlab, Comsol, JUCE, Blender