Kyung Yun Lee

https://kyungyunlee.github.io

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Research Interests

My PhD research focuses on modeling complex room acoustics for augmented reality and embodied intelligence. My recent interests are inverse problems and generative models for room acoustics, and, audiovisual spatial scene understanding and generation.

Education

- **Aalto University** — Espoo, Finland
  PhD in School of Electrical Engineering — *Sept. 2023 - Aug. 2027*
  Acoustics Lab, Department of Information and Communications Engineering

- **Korea Advanced Institute of Science and Technology (KAIST)** — Daejeon, S.Korea
  Master of Science in Graduate School of Culture and Technology — *Sept. 2018 – Aug. 2021*
  Music and Audio Computing Lab

- **Korea Advanced Institute of Science and Technology (KAIST)** — Daejeon, S.Korea
  Bachelor of Science in Computer Science, minor in Industrial Design — *Sept. 2011 – Aug. 2018*

Research/Work Experience

- **Advanced Machine Intelligence Lab, KAIST** — Daejeon, S.Korea
  Visiting researcher — *May 2026 - Oct 2026*
  - **3D audiovisual spatial scene understanding**

- **Gaudio Lab** — Seoul, S.Korea
  AI/Audio research scientist — *Mar 2022 - July 2023*
  - **Blind RIR estimation**: Developing a dynamic room impulse response estimation system for real-time applications

- **Weverse Company, HYBE** — Seoul, S.Korea
  Data Engineer — *July 2021 - Mar 2022*
  - **Real-time log pipeline**: Refactored and migrated the existing streaming and batch pipeline from Hive to delta format tables. Handling and monitoring large traffic data from artists and fans.

- **Deezer** — Paris, France
  Research intern — *Apr - Sept 2019*

- **Naver Corp.** — Seongnam, S.Korea
  Research intern — *Jun - July 2018*

Publications

- **Perception-Inspired Bayesian Causal Fusion for Audiovisual Source Localization**
  ***Kyung Yun Lee**, Sungnyun Kim, Sebastian J. Schlecht, Tae-Hyun Oh, Vesa Välimäki*
  Submitted to ICASSP 2027

- **Estimation of Room Impulse Responses from Handclaps**
  *Shih-Yu Lai, **Kyung Yun Lee**, Nils Meyer-Kahlen, Eloi Moliner, Bing-Yu Chen, Vesa Välimäki*
  Submitted to ICASSP 2027

- **Solving Room Impulse Response Inverse Problems Using Flow Matching with Analytic Wiener Denoiser**
  ***Kyung Yun Lee**, Nils Meyer-Kahlen, Vesa Välimäki, Sebastian J. Schlecht*
  The Journal of Acoustical Society of America, May 2026

- **AnyRIR: Robust Non-intrusive Room Impulse Response Estimation in the Wild**
  ***Kyung Yun Lee**, Nils Meyer-Kahlen, Karolina Prawda, Vesa Välimäki, Sebastian J. Schlecht*
  IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2026

- **Evaluating Reverberation Models for Augmented Reality**
  ***Kyung Yun Lee**, Nils Meyer-Kahlen, Sebastian J. Schlecht, Vesa Välimäki*
  Journal of Audio Engineering Society, vol. 73, Oct. 2025

- **Fade-in Reverberation in Multi-room Environments Using the Common-Slope Model**
  ***Kyung Yun Lee**, Nils Meyer-Kahlen, Georg Götz, Peter U. Svensson, Sebastian J. Schlecht, Vesa Välimäki*
  AES International Conference on Audio for Virtual and Augmented Reality 2024

- **A Multi-room Transition Dataset for Blind Estimation of Energy Decay**
  *Philipp Götz, Georg Götz, Nils Meyer-Kahlen, **Kyung Yun Lee**, Karolina Prawda, Emanuël AP Habets, Sebastian J Schlecht*
  The 18th International Workshop on Acoustic Signal Enhancement (IWAENC) 2024

- **Room Impulse Response Estimation in a Multiple Source Environment**
  ***Kyung Yun Lee**, Jeonghun Seo, Keunwoo Choi, Sangmoon Lee, Ben Sangbae Chon*
  AES International Conference on Spatial and Immersive Audio 2023

- **PocketVAE: A Two-step model for Groove Generation and Control**
  ***Kyung Yun Lee**, Wonil Kim, Juhan Nam*
  Arxiv 2021

- **Learning a Joint Embedding Space of Monophonic and Mixed Music Signals for Singing Voice**
  ***Kyung Yun Lee**, Juhan Nam*
  Proceeding of 20th International Society of Music Information Retrieval (ISMIR) Conference, Delft, Netherlands, 2019

- **Deep Content-User Embedding Model for Music Recommendation**
  *Jongpil Lee, **Kyung Yun Lee**, Jiyoung Park, Jangyeon Park, Juhan Nam*
  Arxiv 2018

- **Revisiting Singing Voice Detection: A Qualitative Review and the Future Outlook**
  ***Kyung Yun Lee**, Keunwoo choi, Juhan Nam*
  Proceeding of 19th International Society of Music Information Retrieval (ISMIR) Conference, Paris, France, 2018

- **Music Galaxy Hitchhiker : 3D Web Music Navigation through Audio Space**
  *Dongwoo Suh, **Kyungyun Lee**, Jongpil Lee, Jiyoung Park, Juhan Nam*
  Late-Breaking/Demo session of 18th International Society of Music Information Retrieval (ISMIR) Conference, Suzhou, China, 2017

Awards & Activities

- **2020 WiMIR (Women in ISMIR) editorial team**

- **PyCascades 2019 Talk**
  Talk title: "So tell me, what is your musical taste?"

- **KAIST Undergraduate Research Project Excellence Award 2017**
  Dongwoo Suh, Kyungyun Lee
  Music Retrieval and Recommendation System Using Music Auto-Tagging

- **IDEA Award 2015: Bronze medal**
  Sangmin Bae, Jonguk Im, Kyungyun Lee, Juhyeong Park and Subin Choi
  Roll-Di: Roll Screen Curtain Direction Indicator

Teaching Experience

- **Teaching Assistant, Aalto University** Winter/Spring 2025, 2026
  ELEC-E5620 Audio Signal Processing