

Lenny Renault

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Machine Learning • Signal Processing • Generative AI • Multimodal Modeling • Neural Audio Synthesis

Research scientist specialized in neural audio synthesis and conditional generative models for music. PhD on piano performance rendering and DDSP-based MIDI-to-audio synthesis. Experience with music information retrieval, symbolic-audio modeling.

Education

PhD in Computer Science

Sorbonne University

Paris, France

Dec 2020 - Jul 2024

- Thesis: Neural Audio Synthesis of Realistic Piano Performances.
- Jury members: Mark Sandler, Mathieu Lagrange, Gaël Richard, Jesse Engel, Juliette Chabassier, Axel Roebel.

Master of Science in Computer Science

Sorbonne University

Paris, France

Sep 2019 - Sep 2020

- ATIAM Master: Acoustic, Signal Processing and Computer Science Applied to Music.

Master of Science in Engineering

Télécom Paris (Institut Polytechnique de Paris)

Paris, France

Sep 2017 - Sep 2020

- Major in Signal Processing applied to Artificial Intelligence. Minor in Computer Graphics, 3D and Human-Computer Interactions.

Musical Studies Certificate – Piano

Municipal School of Arts

Joinville-le-Pont, France

Sep 2005 - Jun 2019

- Musical Studies Certificate (CEM) in classical piano with Highest Honors after completing the three study cycles.

Experience

IRCAM

Doctoral Researcher

Paris, France

Dec 2020 - Jul 2024

- Advisors: Rémi Mignot, Axel Roebel. Topics: Symbolic Music Processing, Instrument Modeling, Conditional Generation, DDSP.

Deezer

Research Scientist Intern

Paris, France

Feb 2020 - Aug 2020

- Advisors: Andrea Vaglio, Romain Hennequin. Topics: Music Information Retrieval, Lyrics Transcription.

Skills

Programming

Python (Tensorflow, PyTorch), C/C++ (JUICE, Kaldi, OpenGL), Docker, Git, LaTeX, Bash.

Languages

French (native), English (Fluent: C1), Chinese (Intermediate: HSK3), Spanish (Intermediate: B1), Japanese (Initiated: A2).

Publications

Neural Audio Synthesis of Realistic Piano Performances

Sorbonne University 2024

Lenny Renault

- Thesis manuscript compiling published works and unreleased experiments on cross-modal performance rendering.

Expressive Piano Performance Rendering from Unpaired Data

DAFx 2022

Lenny Renault, Rémi Mignot, Axel Roebel

- Render expressive performances from weakly-informed scores without supervised training on score-performance pairs.

DDSP-Piano: a Neural Sound Synthesizer Informed by Instrument Knowledge

JAES Sep 2023

Lenny Renault, Rémi Mignot, Axel Roebel

- Journal extension of the DAFx20in22 paper. Published in the Special Issue on *New Trends in Audio Effects II*.

Differentiable Piano Model for MIDI-to-Audio Performance Synthesis (Best Paper Award)

DAFx 2022

Lenny Renault, Rémi Mignot, Axel Roebel

- DDSP-based piano model incorporating high-level acoustic modeling knowledge for handling specificities of the piano sound.

Singing Language Identification using a Deep Phonotactic Approach

ICASSP 2021

Lenny Renault, Andrea Vaglio, Romain Hennequin

- Modernized phonotactic system for Singing Language Identification on polyphonic music.

Commitments

Organization and Program Committees

- Reviewer for DAFx24. Organizer for the Young Researchers' days on Hearing, Music Acoustics and Audio Signals (JJCAAS) 2023.

Interests

Music, Sports and Trading Card Games

- Music: guitarist in Unheaven (2017-), keyboardist in Marchands de Groove (2023-2024), pianist in a jazz band (2017-2020).
- Sports: kickboxing (2025), karate-koshiki (2022-2025), blue belt in karate-jitsu (2020-2024), table tennis (2009-2014).
- TCG Judge in Yu-Gi-Oh! tournaments (Nationals: UK 2024, France 2025. YCS: Birmingham 2025, Lille 2025, Bologna 2025).