Lejun Min

Researcher, Artist
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EDUCATION

Center for Computer Research in Music and Acoustics, Stanford University Sept. 2024 – Present
Master of Art in Music, Science, and Technology (Fellowship) California, United States

- Ongoing courses: Audio Signal Processing, Music, Computing, Design, Human-Centered LLMs.
- Advisor: Prof. Julius O. Smith, Prof. Takako Fujioka.

ACM Honor Class, Shanghai Jiao Tong University Sept. 2019 – June 2023
Bachelor of Engineering in Computer Science (Fellowship) Shanghai, China

- An elite CS program for **top 5%** students.
- GPA: 88.5/100 (ranking: 6/30).

PUBLICATIONS

X. Qu, Y. Bai, Y. Ma, Z. Zhou, K. Lo, J. Liu, R. Yuan, **L. Min**, X. Liu, T. Zhang, X. Du, S. Guo, Y. Liang, Y. Li, S. Wu, J. Zhou, T. Zheng, Z. Ma, F. Han, W. Xue, G. Xia, E. Benetos, X. Yue, C. Lin, X. Tan, S. Huang, W. Chen, J. Fu, G. Zhang, "MuPT: A Generative Symbolic Music Pretrained Transformer", submitted to *Proc. 13th International Conference on Learning Representations (ICLR 2025)*. [arXiv] [OpenReview] [Demo]

Z. Wang, **L. Min**, G. Xia, "Whole-song Hierarchical Generation of Symbolic Music Using Cascaded Diffusion Models", **Spotlight (top 5%)** in *Proc. 12th International Conference on Learning Representations (ICLR 2024)*, Vienna, May 2024. [arXiv] [OpenReview] [Demo]

L. Min, J. Jiang, G. Xia, J. Zhao, "Polyffusion: A Diffusion Model for Polyphonic Score Generation with Internal and External Controls", in *Proc. 24th International Society for Music Information Retrieval Conference (ISMIR 2023)*, Milan, November 2023. [arXiv] [Poster] [Demo]

RESEARCH EXPERIENCE

Hierarchical Generation and Performance Rendering of Symbolic Music Sept. 2023 – Feb. 2024
Research Assistant at Music X Lab, MBZUAI Abu Dhabi, United Arab Emirates

- Designed and implemented comprehensive experiments for the hierarchical generation of symbolic music, with a cascaded diffusion model as backend.
- Experimented on performance rendering for symbolic music using Transformer architecture.
- Advisor: Prof. Gus Xia.

Controllable Symbolic Music Generation with Diffusion Models June 2022 – Dec. 2022
Research Assistant at Music X Lab, MBZUAI Abu Dhabi, United Arab Emirates

- Achieved state-of-the-art polyphonic music generation using diffusion models.
- Devised two control paradigms for music generation in the diffusion model framework: internal control via masked generation, and external control via cross-attention mechanism.
- Advisor: Prof. Gus Xia.

Deep Learning on Piano Reduction and Orchestration Jan. 2022 – May 2022
Researcher at Music X Lab, New York University, Shanghai Shanghai, China

- Projected piano and orchestral scores to a joint latent space with variational autoencoders.
- Applied contrastive learning on the latent space with end-to-end autoencoder training.
- Advisor: Prof. Gus Xia.

LANGUAGE PROFICIENCY

Mandarin Chinese (native), English (fluent), French (beginner)
TOEFL: **112** (Reading **30**, Listening **30**, Speaking **24**, Writing **28**)
GRE: Verbal **162**, Quantitative **170**, Writing **4.0**

PROGRAMMING PROJECTS

Computer Graphics

Gigantic Splight (*Python*) June 2022
An interactive 3D fluids simulation based on Taichi framework.

Scotty3D (*C++*) Mar. 2022
A comprehensive CG project including software rastization, interactive mesh editing, realistic path tracing, and dynamic animation.

Ray Tracer (*Rust*) Aug. 2020
A complete ray tracing engine.

Audio Signal Processing

Simple EQ (*C++*) Jan. 2022
A step-by-step JUCE learning project for audio plugin development.

Audiobia (*Python & Tensorflow*) May 2021
Audio classification using Google's EfficientNet and Harmonic Percussive Source Separation (HPSS).

Compiler, Computer Architecture & System

Mx Compiler (*Java*) May 2021
A completely hand-made compiler for a toy language (Java subset) that surpasses `-O1` optimization.

RISC-V CPU (*Verilog*) Dec. 2020
An emulated 5-pipelined RISCV32I CPU with real-world FPGA implementation.

Python Interpreter (*C++*) Feb. 2020
A Python language interpreter.

Software Development

Train Ticket System (*C++*) June 2020
A cooperated project including backend coding, B+ Tree data structure implementation and frontend website design.

ART PRACTICES

Interface / Narrative Design

Kandinsky Sonified (*ChucK & ChuGL*) Nov. 2024
An interactive audiovisual music sequencer that creates and sonifies Kandinsky-like abstract paintings.

Fireflies (*ChucK & ChuGL*) Oct. 2024
An interactive music therapy journey embodying a firefly. Essentially a sound peeking visualization.

Music

忆久 (Memories Last Long) June 2023

A song and a music video dedicated to the graduates of 2023, Zhiyuan College.

Should Have Known Better (piano & synth cover) Feb. 2023

Piano, synth & singing performance.

晚海 (Sunset Sea) Dec. 2021

A single published under CEM Records, one of the most prestigious electronic music labels in China.

TEACHING

Reinforcement Learning (CS3316) Spring 2023

Teaching Assistant at SJTU Shanghai, China

- Designed the final project involving single- or multi-agent learning for simulated hands and legged robot.
- Lecturer: Prof. Weinan Zhang.

Design and Analysis of Algorithms (AI2615) Spring 2022

Teaching Assistant at SJTU Shanghai, China

- Lecturer: Prof. Chihao Zhang.

Principle and Practice of Computer Algorithms (CS1952) Summer 2021

Teaching Assistant at SJTU Shanghai, China

- Designed a comprehensive ray tracing tutorial written in the Rust language. The repository received 100+ stars on GitHub.
- Supervisor: Prof. Yong Yu.