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# Yi Liu

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## Education

**University of California San Diego**, MS in Electrical and Computer Engineering — Sept 2024 – June 2026

**Nanjing University**, BS in Acoustics — Sept 2020 – June 2024

## Experience

**Research Assistant**, University of California San Diego – San Diego, CA, US — Oct 2025 – present
- Realtime edge device image editing with Diffusion model. Collaborated with Qualcomm.

**Machine Learning Engineer, Intern**, Bose Corporation – Framingham, MA, US — June 2025 – present
- Design model for real-time open vocabulary keyword spotting on edge device. Achieve better performance than SOTA model SLICK with smaller parameter size.
- Identified limitations in existing evaluation dataset and developed a novel dataset using generative models to address coverage gaps and improve benchmarking robustness.

**Artificial Intelligence Engineer, Intern**, Papergames/Infold Games – Shanghai, China — Feb 2024 – Aug 2024
- Designed machine learning algorithms to predict acoustic emotional words and alignment.

## Publications

**Towards Controllable Symbolic Music Diffusion Models (under review)**
***Yi Liu***, Jingyue Huang, Zachary Novack
The 40th Annual AAAI Conference on Artificial Intelligence

**No Word Left Behind: Mitigating Prefix Bias in Open-Vocabulary Keyword Spotting (under review)**
***Yi Liu***, Chuan-Che (Jeff) Huang, Xiao Quan
2026 IEEE International Conference on Acoustics, Speech, and Signal Processing

## Technologies

**Languages:** Skilled in Python, C, C++, capable in Unix shell scripts, CUDA, Java, Matlab, Mathematica

**Frameworks:** Skilled in Pytorch, Tensorflow, XGBoost, some experience with MPI, ISPC, Eigen, ONNX

**Algorithms:** machine learning, speech/audio, NLP/LLM, Recommender Systems, DSP, numerical method

## Projects

**Open-Vocabulary Keyword Spotting** — June 2025 – present
- Demo Link https://yi-liu.top/demos/open-vocabulary-keywords-spotting/

**Diffusion Language Model for Symbolic Music Generation** — Feb 2025 – June 2025
- Proposed several methods for controllable music generation applications, leveraging the discrete diffusion model. Proved that discrete diffusion generates more variant samples over auto-regressive model.
- Demo Link https://yi-liu.top/demos/music-discrete-diffusion-model/

**Parallel Optimization Based on Picard Iteration for Biased SGD** — Dec 2024 – Mar 2025
- Implemented parallel optimization algorithm with support for PyTorch integration. Conduct experiments on binary nerual networks.

**Audio Packet Loss Concealment** — June 2022 – Dec 2023
- Incorporate adversarial training with causal attention-based networks for real-time edge device application.
- Participated in the 2024 ICASSP Audio Deep Packet Loss Concealment Challenge, ranked 8th.

## Academic Service

**Reviewer, The 40th Annual AAAI Conference on Artificial Intelligence** — Aug 2025