Mingyang Yao

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Education

University of California, San Diego   *Sept 2022 – Dec 2025*
BS in Mathematics and Computer Science   *(expected)*
BS in Cognitive Science with spec. in Machine Learning and Neural Computation
GPA: 3.928/4.000

Research Interests

- Conditional Music Generation
- Music Information Retrieval
- Cross-modality Alignment, including symbolic, audio, and text

Publications

From Generality to Mastery: Composer-Style Symbolic Music Generation via Large-Scale Pre-training Paper Link ↗

Mingyang Yao, Ke Chen
The Sixth Conference on AI Music Creativity (AIMC 2025); Oral Presentation

BACHI: Boundary-Aware Symbolic Chord Recognition Through Masked Iterative Decoding on Pop and Classical Music Link ↗

Mingyang Yao, Ke Chen, Shlomo Dubnov, Taylor Berg-Kirkpatrick
Full Paper Submitted to ICASSP 2026 and Under Review

The development of FEDUPP: Feeding Experimentation Device Users Processing Package to Assess Learning and Cognitive Flexibility Paper Link ↗

Mingyang Yao*, Avraham M Libster*, Shane Desfor, Freiya Malhotra, Nathalia Castorena,
Patricia Montilla-Perez, Francesca Telese
Full Paper Submitted to Journal and Under Review

Research Experience

Conditional Symbolic Music Generation| Independent Research   *Feb 2024 - April 2025*
Mentor: Ke Chen ↗ | Adobe Research

- Developed and released ↗ a 16,000 multi-genre MIDI corpus with curated classical composer subsets and enhanced REMI tokenization with improved time signature handling and finer temporal resolution
- Designed a two-stage training approach combining large-scale pre-training on diverse musical genres with targeted fine-tuning on composer-specific works, achieving superior few-shot style transfer compared to contemporary NotaGen-finetuned ↗.
- Established a comprehensive evaluation framework integrating quantitative style fidelity metrics, harmonic progression analysis, structural consistency measures, and systematic human preference studies to rigorously assess compositional quality and stylistic authenticity
- Delivered complete research pipeline including reproducible codebase, demo ↗ page, and full manuscript accepted at AIMC 2025

Symbolic Chord Recognition| Independent Research   *June 2025 - Sept 2025*
Mentor: Ke Chen ↗, Taylor Berg-Kirkpatrick | University of California San Diego

- Architected boundary-aware transformer combining piano-roll patch embeddings with FiLM-based bound-

ary conditioning and confidence-ordered masked decoding for chord root, quality, and bass prediction

- ○ Demonstrated that confidence-ordered prediction strategy, inspired by human annotation workflows, achieves state-of-the-art performance with over 8% improvement compared to the best existing baseline on classical music benchmarks
- ○ Curated POP909-CL dataset based on POP909 ↗ with expert chord annotations, enabling robust evaluation across popular music genres and contributing a valuable resource to the music information retrieval community
- ○ Completed full manuscript currently under review at ICASSP 2026

Telese Lab | Research Assistant   *Sept 2023 - Present*
Principal Investigator: Francesca Telese

- ○ Developed FEDUPP, the first comprehensive open-source Python pipeline ↗ for automated analysis of FED3 feeding device data, addressing a critical gap in behavioral neuroscience research tools
- ○ Integrated machine learning methods, including unsupervised clustering for semi-auto data labeling and LSTM-based classifiers for feeding quality assessment, enabling feeding data analysis with transferable paradigms applicable to similar metrics
- ○ Served as co-first author, leading substantial contributions to methodology design, experimental validation, and manuscript preparation, while coordinating interdisciplinary collaboration throughout the post-submission revision process
- ○ Implemented computer vision pipeline using fine-tuned YOLOv11 and DeepLabCut software for automated video data processing and mouse trajectory tracking, demonstrating technical leadership in an interdisciplinary research environment

Teaching Experience

Instructional Apprentice   *Fall 2023*
Course: Cogs 18 - Introduction to Python | Instructor: Eric Morgan

- ○ Hold Discussion and Office Hour for 3 hours per week, providing individualized support for programming concepts and assignment guidance to undergraduate students
- ○ Grade weekly programming assignments and exams, delivering timely feedback to support student learning and ensuring consistent grading standards across course sections
- ○ Achieved 100% positive recommendation rate from student evaluations, reflecting effective communication and dedication to student success

Reader/Grader   *April 2024 - Dec 2024*

- ○ Math 154 - Discrete Math and Graph Theory (Spring 2024; Professor William Wesley)
- ○ Math 20D - Introduction to Differential Equations (Fall 2024; Professor Rishabh Dixit)

Related Honors and Awards

Chinese Musicians' Association (CMA) Piano Graded Examination (Amateur), Level 10 Certificate (2015)

UCSD Provost Honor (2022-2025)

UCSD Health Student Research Assistant Summer Fellowship (2024)