Jiali LIU

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GitHub | Soundcloud | YouTube | Website

RESEARCH INTEREST

Audio Source Separation; Music Generation (Video-to-Music, Dance-to-Music); Human-AI Interaction; Music Theory; Music Information Retrieval;

EDUCATION

Longy School of Music of Bard College **Cambridge, MA, USA**
Master of Music in Composition (GPA: 3.91/4.0) *Sep.2024 – June.2026*

- Advisors: Dr. Alexandra du Bois and Prof.Woody Pak
- Research areas: Music Theory,
- **Thesis**: Multiple Realizations of the Same Pitch and Timbral Stratification in Georg Friedrich Haas's String Quartet No.2

Xinghai Conservatory of Music, **Guangzhou, China**
Bachelor of Music in Composition (GPA: 4.0/5.0) *Sep.2019 – July.2024*

- Research areas: Classical Compositions, Music Production
- **Thesis**: A Study on the Application of Beethoven's Themes and Compositional Techniques in Unsuk Chin's Orchestral Work Subito con forza
- Selected for the Outstanding Talent Development Program in China, 2022

RESEARCH PROJECTS

TIPS: Text-Guided Instrument Separation for Traditional Chinese Instruments June.2026 –Oct.2026

[Paper] [Website]

- Developed a generative music source separation framework integrating T5-based text encoding, a Diffusion Transformer (DiT), and conditional rectified flow matching to extract target instruments from musical mixtures using natural-language queries.

- Designed a category-level target aggregation strategy to address the granularity mismatch between text queries and individual-stem supervision.

- Conducted objective evaluations and perceptual listening assessments across eight traditional Chinese instrument categories, investigating applications in traditional music analysis and digital preservation.

Affect Atlas: Music Emotion Analysis and Visual Interpretation April.2026 – Sep.2026

[Live Demo] [Github] [Website]

Explored how music emotion analysis and interactive visualization can help listeners understand the emotional character of music.

- Built an interactive application that maps music along valence and arousal, combining a pretrained music model with visual interpretation.

- Linked exploratory emotion curves with audio playback, allowing users to listen, inspect changes across a musical excerpt, and export results.

- Investigated adaptation across music collections using listener ratings; a ten-song calibration reduced arousal prediction error by an average of 13.50% in a fixed cross-dataset evaluation.

Motif-Consistent Video-to-Music Generation May.2026 — Present

Investigating how video-to-music generation systems can maintain coherent **core musical material** across changing visual scenes while adapting musical expression to local visual contexts.

- Identified limitations of independent clip-based music generation, particularly the lack of explicit mechanisms for maintaining musical continuity across scene changes.
- Developing a representation of core musical material including **motif, melodic contour, characteristic intervals, rhythmic patterns, and harmonic relationships**.
- Designing a video-conditioned framework that adapts orchestration, timbre, texture, register, dynamics, and rhythmic density while preserving relationships to shared musical material.
- Developing evaluation protocols for **motif consistency, musical continuity, audiovisual alignment, and context-sensitive musical expression**.

RESEARCH PROFILE

Interdisciplinary researcher working at the intersection of music composition, artificial intelligence, and computer music. My research focuses on developing computational approaches to music generation and audio understanding, with particular emphasis on musical structure, continuity, and expressive control. Drawing on formal training in composition and experience in machine learning, I aim to develop music AI systems that integrate computational modeling with compositional knowledge and human musical intuition.

SKILLS

- **Programming & Machine Learning:** Python, PyTorch, NumPy, Pandas
- **Audio & Music Computing:** MIDI, Audio Processing, Music Generation, Audio Source Separation, Music21
- **Creative Technologies:** Max/MSP, Logic Pro, TouchDesigner, Sibelius
- **Music:** Composition, Harmony, Counterpoint, Orchestration, Musical form and analysis, Piano

SELECTED COMPOSITIONS

- **Braid** (electronic audiovisual work) 2026
- **Veiled Brook in the Forest Mist (**mixed ensemble) Performed by Collage Ensemble 2026
- **Fleeting Light and Shadows (**piano trio)Performed at Pickman Hall by Horszowski Piano Trio 2025
- **Solitary Boat (**for orchestra) Performed by Longy's Orchestra, Arts at the Armory, MA 2025

HONORS

- Diploma Prize Winner, *Malta International Composition Competition* 2023
- Honor Prize, *Bud Cup Children's Chorus Composition Competition in Central Conservatory of Music* 2023
- Second Prize, *Art Song Composition Competition* 2022