

# Haoyu Gu

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[Personal Homepage](#)



## EDUCATION

Last Update: October 17, 2025

### South China University of Technology

Sep. 2023 – Present

- [School of Future Technology](#), Artificial Intelligence
- [Shien-Ming Wu School of Intelligent Engineering](#), Robotics Engineering

Jan. 2024 – Present

Sep. 2023 – Dec. 2023

**GPA:** 3.97/4.0   1/90 (1.1%)   **Weighted Average:** 93.93   2/90 (2.2%)

**Core Courses:** C++ Programming, Python Programming, Discrete Mathematics, Data Structures, Computer Networks, Computer Organization and Architecture, Database Systems, Circuit Analysis and Analog Circuits, Digital Circuits, Signals and Systems, Digital Signal Processing, Machine Learning, Deep Learning and Computer Vision, Data Mining

**English Proficiency:** CET-4: 600 (Freshman Fall), CET-6: 548 (Freshman Spring)

**Technical Skills:** Proficient in C++ for algorithm implementation; Proficient in Python for deep learning environment setup and model training; Proficient in Git for version control and collaborative development; Proficient in LaTeX for academic paper writing; Familiar with AI-assisted development tools (Cursor, Claude Code, etc.)

**Research Interests:** Generative Artificial Intelligence (Music and Audio), Representation Learning and Long Sequence Generation for Symbolic Music, Structured Modeling of Speech and Audio

## AWARDS AND HONORS

- Lanqiao Cup C++ Programming Group A - Guangdong Province Second Prize   May 2025
- National College Student Mathematics Competition - Guangdong Division Second Prize   Nov. 2024
- SCUT Mathematics Competition - First Prize   Sep. 2024
- China Undergraduate Mathematical Contest in Modeling - Guangdong Province Second Prize   Sep. 2024
- Embedded Chip and System Design Competition - Southern Region Second Prize   Aug. 2024

## RESEARCH EXPERIENCE

### Pianoroll-Event: A Novel Score Representation for Symbolic Music

Aug. 2025 – Sep. 2025

ICASSP 2026 (Under Review)

Co-second Author, Advisor: [Prof. Qi Liu](#)

- **Research Area and Motivation:** Focused on symbolic music representation and compression encoding. Observed that existing event-based symbolic music representations struggle to enable models to fully capture temporal dependencies, while traditional Pianoroll representations contain significant redundancy, limiting generation model efficiency and quality.
- **Research Content and Innovation:** Proposed the Pianoroll-Event representation method, which converts Pianoroll into different types of event sequences, achieving efficient compression while ensuring lossless information. This method significantly reduces sequence length and improves generation quality, with generated music approaching the quality of the original dataset.
- **Personal Contribution:** Proposed the core encoding design concept, responsible for main paper writing, and fixed critical code issues in the encoding implementation process.

### Anchored Cyclic Generation: A Paradigm for Long-Sequence Symbolic Music Generation

Jan. 2025 – Aug. 2025

AAAI 2026 (Under Review)

Fourth Author, Advisor: [Prof. Qi Liu](#)

- **Research Area and Motivation:** Focused on long-sequence generation and modeling of symbolic music, exploring how to maintain structural consistency and logical coherence while extending generation sequences. Proposed a stable and efficient generation paradigm to address error accumulation and structural drift issues in autoregressive models for long-sequence modeling.
- **Research Content and Innovation:** Proposed the Anchored Cyclic Generation paradigm, introducing anchor features to dynamically correct the generation process, significantly mitigating error accumulation; further constructed a hierarchical anchoring framework, using a two-level generation strategy of global sketch and local refinement to simulate human composition logic, enhancing overall structure and controllability of generated music.
- **Personal Contribution:** Responsible for algorithm mechanism analysis and method section writing, participated in model experiments and overall paper formatting optimization.