

Baotong Tian

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Education

University of Rochester

August 2024 – Present

Ph.D. in Electrical and Computer Engineering

Tsinghua University

September 2020 – June 2024

Bachelor of Engineering in Automation

GPA 3.86/4.0

Research Interests

My research interests lie in AI for Music Information Retrieval and speech processing. In music, I focus on developing AI tools for musicians and producers (expressive and controllable music rendering, AI mixing, etc). In speech, I'm interested in voice conversion and controllable text-to-speech synthesis.

Scholarships & Awards

- **2021, 2022 Tsinghua Arts and Culture Merit Scholarship** (Awarded to undergraduate students for great contribution to cultural activities within the department)
- **2022, 2023 Tsinghua Academic Excellence Scholarship** (Awarded to undergraduate students for excelling GPA throughout the school year)
- **2023 Tsinghua Innovation Award of Science and Technology** (Awarded to undergraduate students with excellent research potential)
- **2025 WIMIR Grant from ISMIR**

Publication & Conference Submission

- You, Zhang*, **Baotong Tian***, Lin Zhang, Zhiyao Duan. "PartialEdit: Identifying Partial Deepfakes in the Era of Neural Speech Editing." Proc. Interspeech 2025. [[Paper](#)], [[Project Page](#)], [[Dataset](#)]
- Zhang, Yu, **Baotong Tian**, and Zhiyao Duan. "Conan: A Chunkwise Online Network for Zero-Shot Adaptive Voice Conversion." arXiv preprint arXiv:2507.14534 (2025). [[Arxiv](#)]
- Borui, Zhang*, **Baotong Tian***, Wenzhao Zheng, Jie Zhou, and Jiwen Lu. "Exploring Unified Perspective For Fast Shapley Value Estimation." arXiv preprint arXiv:2311.01010 (2023). [[Arxiv](#)]

Research Experience

Diffusion-based Violin Transcription and Synthesis

Jun, 2025 - Present

Research Assistant, Advisor: Zhiyao Duan

Audio Information Research (AIR) Lab, Department of Electrical and Computer Engineering, University of Rochester

- Created a paired dataset by annotating expressive MIDI with note-level violin techniques and rendering corresponding audio with a commercial Kontakt sample library.

PartialEdit

Sep, 2024 - Jun, 2025

Research Assistant, Advisor: Zhiyao Duan

Audio Information Research (AIR) Lab, Department of Electrical and Computer Engineering, University of Rochester

- Created the partially deepfake dataset **PartialEdit** using advanced neural speech-editing models.
- Evaluated state-of-the-art utterance-level detectors and segment-level localization methods on this dataset, showing that models trained on traditional partially spoofed audio fail to detect speech edited by neural speech-editing models.
- Discussed how artifacts introduced by codec models affect the performance of models.

Streaming Voice Conversion

Sep, 2024 - Present

Research Assistant, Advisor: Zhiyao Duan

Audio Information Research (AIR) Lab, Department of Electrical and Computer Engineering, University of Rochester

- Co-developed **Conan**, a chunk-wise online model for zero-shot voice conversion.
- Adapted to model timbre and style separately, and proposed a pixel-shuffle HifiGAN for streaming applications.

Controllable Sheet Music Generation

June, 2021 - Dec, 2022

Research Assistant, Advisors: Xin Jin & Duo Xu & Song-chun Zhu
AI Music Group, Beijing Institute for General Artificial Intelligence

- Learned music psychology and emotion perception in music.
- Learned about the generative theory and basic structural analysis of tonal music.
- Participated in the implementation of Music And-or-Graph.
- Developed a genetic algorithm for **music variation** in Python.

Explainable Machine Learning

Feb, 2023 - Jun, 2024

Research Assistant, Advisors: Jiwen Lu & Jie Zhou
Intelligent Vision Group, Department of Automation, Tsinghua University

- **Unified** current approaches of Shapley value estimation.
- Proposed **SimSHAP** as a simple and fast amortized Shapley value estimator.

Work Experience

Automatic Chord Recognition for Pop songs (Internship)

Jun, 2023 - Aug, 2023

Algorithm Engineer, Advisor: Jian Wu
R&D Department, Beijing Deepmusic Technology Co.

- Applied Bi-LSTM for multi-task learning of bass and chord quality.
- Applied **Conditional Random Field** (CRF) as a post-filtering technique to enhance chord recognition task accuracy by incorporating context information.

Teaching

Teaching Assistant:

- ECE208/408 The Art of Machine Learning
- ECE270 Probability for Electrical Engineers

Spring 2025
Fall 2025

Professional Services

Reviewer

Journal:

- IEEE Transactions on Audio, Speech, and Language Processing (TASLP) 2025

Conference:

- IEEE Automatic Speech Recognition and Understanding Workshop 2025

Volunteer

- ISMIR 2025 2025

Music Background and Interests

Singing

- Joined the school choir at primary school.
- Won the 4th place in the Singing Carnival in High School.

Instrument Playing

- Electric Piano (age 5 to 12, got the Amateur Highest Performance Level at the age of 12)
- Guitar (age 13 to present)

Music Composition & Production

- Learned basic music production skills such as music arrangement and mixing in college.
- Selected for the Class of 2021-2022 in **Tsinghua University's Music Dream Program**, which is designed to nurture and develop campus musicians.
- Released 6 songs on QQ music & The NetEase's Cloud music, produced by **Logic Pro X**.

Links

- Solo and Choir performance can be seen [\[here\]](#).
- My musician page on [\[The NetEase's Cloud Music\]](#), [\[QQ Music\]](#), and [\[SoundCloud\]](#).

Programming & Language Skills

Programming Skills:

- Proficient: Python, PyTorch, Markdown, LaTeX, Git
- Familiar: MATLAB, C/C++, Linux, TensorFlow, HTML, etc

Languages:

- TOEFL iBT: 104/120 (Reading 26, Listening 29, Speaking 24, Writing 25)
- GRE: 328/340 + 4.0/6.0 (Verbal 158, Quantitative 170, Analytical Writing 4.0)