Fang-Duo Tsai

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Education

PhD **National Taiwan University**, Graduate Institute of Communication Engineering — 09.2023 ~

- Combined Master's and PhD program
- Research areas: Controllable Text-to-Music, Music editing, Diffusion Models
- Advisors: Prof. Yi-Hsuan Yang, Prof. Hao-Chung Cheng

BS **National Taiwan University**, Electrical Engineering — 02.2020 ~06.2023

- Research areas: Text-to-Music, Deep Learning and Computer Vision, Wifi motion detection
- Advisors: Prof. Yi-Hsuan Yang, Prof. Yu-Chiang, Frank Wang, Prof. Hung-Yun Hsieh

Publications

[1] **Fang-Duo Tsai**, Yi-An Lai, Fei-Yueh Chen, Li Chai, Hao-Chung Cheng, Yi-Hsuan Yang "ComposerFlow: Step-by-Step Compositional Song Generation." In *In International Conference on Learning Representations* ***(under review)***, 2025. — 09.2025
[pdf] [Demo website]

[2] **Fang-Duo Tsai**, Yi-Hsuan Yang "Demonstrating Singing accompaniment capabilities for MuseControlLite" In *The Thirty-Ninth Annual Conference on Neural Information Processing Systems* ***(Neurips Music4AI workshop demo)***, 2025. [pdf] | — 08.2025

[3] Wei-Jaw Lee, Fang-Chih Hsieh, Xuanjun Chen, **Fang-Duo Tsai**, Yi-Hsuan Yang "Exploring State-Space-Model based Language Model in Music Generation" In *The 26th International Society for Music Information Retrieval Conference* ***(ISMIR LBD)***, 2025. — 07.2025
[arXiv] | [Demo website] |

[4] **Fang-Duo Tsai**, Shih-Lun Wu, Weijaw Lee, Sheng-Ping Yang, Bo-Rui Chen, Hao-Chung Cheng, Yi-Hsuan Yang. "MuseControlLite: Multifunctional Music Generation with Lightweight Conditioners" In *International Conference on Machine Learning* ***(ICML)***, 2025. — 01.2025
[arXiv] | [Code] | [Demo website] | [google colab]

[5] **Fang-Duo Tsai**, Shih-Lun Wu, Haven Kim, Bo-Yu Chen, Hao-Chung Cheng, Yi-Hsuan Yan. "Audio Prompt Adapter: Unleashing Music Editing Abilities for Text-to-Music with Lightweight Finetuning." In *International Society for Music Information Retrieval Conference* ***(ISMIR)*** 2024. — 04.2024
[arXiv] | [Code] | [Demo website] | [Demo video]

Working experiences

Adobe *Incoming Research Scientist Intern* — 05.2026 ~08.2026

Taiwan AI Lab *Research Scientist Intern* — 03.2025 ~03.2026

- Proposed **ComposerFlow**, a step-by-step compositional song generation pipeline that reuses specialized models to enable low-cost, fast training and editable intermediate controls (melody, chords, backing).
- Benchmarked against state-of-the-art song generation systems; achieved comparable quality while enabling fine-grained edits of vocal melody, chord progression, and accompaniment.

Realtek *Software Engineering Intern* — 07.2022 ~08.2022

- Implemented utilities for converting between multiple audio encodings to support internal audio validation workflows.

- Wrote automation scripts for Google TV / Netflix testing on TV SoC platforms to improve regression coverage and reduce manual bring-up time.

Other Research Experiences

Text-to-Music with RLAIF, Prof. Shao-Hua Sun, NTU [paper] — 09.2023 ~01.2024
Traditional Chinese Instrument Generation, Prof. Yi-Hsuan Yang, NTU — 09.2023 ~12.2023
Computer vision and Personalization, Prof. Yu-Chiang Frank Wang, NTU — 09.2022 ~06.2023
WiFi Estimation for Person Pose, Prof. Hung-Yun Hsieh, NTU — 02.2022 ~06.2022

Teaching Experience

Deep Learning for Music Analysis and Generation, — 09.2025 ~12.2025 **Teaching assistant**
- Designed homework related to controllable text-to-music and retrieval. [slides]
- Advised student for final project.

Reinforcement Learning, instructed by Prof. Shao-Hua Sun, NTU — 12.2024 **Final presentation judge**
- Invited as a judge for final project presentation.

Deep Learning for Computer Vision, instructed by Prof. Yu-Chiang Wang, NTU. — 09.2024 ~12.2024 **Teaching assistant**
- Evaluated and scored programming assignments for 140 students.
- Organized and hosted a contest for the final project.

Probability and statistics, instructed by Prof. Hung-Yun Hsieh, NTU. — 02.2022 ~06.2022 **Teaching assistant**
- Evaluated and scored homework, quizzes, and exams for 130 students.
- Answered questions during office hours every week.

Honors and Recognition

National Science and Technology concil PhD scholarship, awarded with **NTD$1,500,000** scholarship — 09.2025
Direct PhD scholarship, awarded with **NTD$1,500,000** scholarship — 06.2025
SIGMIR scholar, awarded with **US$1000** scholarship — 08.2024
1st prize, 3D Reconstruction from Road Marker Feature Points contest | NTUEE, against **15** teams. — 06.2023
Best Creative Award of Robot Car Design Performance | NTUEE, against **24** teams. — 07.2020

Peer review

ICLR (2025), **Neurips Music4AI workshop** (2025), **ISMIR** (2025), **ACM survey journal** (2025)

Invited talks

"Controllable Text-to-Music", at **NTU DeepMIR course**. — 10.2025
"MuseControlLite: Multifunctional Music Generation with Lightweight Conditioners" at **Rochester Audio Information Research Lab**. — 07.2025

Extracurricular actvities

Kick-boxer: Member of the NTU Kick-boxing team. — 02.2020 ~02.2021
Violinist: Honorable Mention in Violin Solo, National Student's Music Contest — 11.2017
Runner, school's fields day | NEHS — 2016 ~2018
- 1st place: 100-meter race
- 1st place: 400-meter race
- 2nd place: 200-meter race