

Fang-Duo Tsai

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Education

- MS** **National Taiwan University**, Graduate Institute of Communication Engineering 09.2023 ~
- GPA: 4.15/4.3 Rank: 39/141
 - 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

Publication

- Audio Prompt Adapter: Unleashing Music Editing Abilities for Text-to-Music with Lightweight Finetuning** 2.2023 ~4.2024
- Fang-Duo Tsai, Shih-Lun Wu, Haven Kim, Bo-Yu Chen, Hao-Chung Cheng, Yi-Hsuan Yan
In International Society for Music Information Retrieval Conference 2024
[\[arXiv\]](#) | [\[code\]](#) | [\[Demo website\]](#) | [\[Demo video\]](#)
- Proposing a framework that equips an audio input modality for a pre-trained text-to-music generation model.
 - Performing zero-shot music editing with a lightweight adapter, which permits flexible balance of the effects of the text and audio inputs.
 - Demonstrating three tasks: timbre transfer, genre transfer, accompaniment generation, and discussing the impact of tunable hyper-parameters.

Research Experiences

- Text-to-Image Personalization**, Prof. Yu-Chiang Frank Wang, NTU 09.2022 ~6.2023
- Implemented personalization methods for Text-to-Image models such as Textual-inversion, Dreambooth and LoRA.
 - We contended the "talking to me" contest. [\[poster\]](#)
- Traditional Chinese Instrument Generation**, Prof. Yi-Hsuan Yang, Prof. Hao-Chung Cheng, NTU 09.2023 ~12.2023
- Since the lack of data for traditional Chinese instruments, we employed methods in Text-to-Image personalization.
 - We modified the Dreambooth method with teacher forcing the language model in AudioLDM2. Results showed our method was 5 times faster than the original Dreambooth.
- Music Editing**, instructed by Prof. Yi-Hsuan Yang, NTU [\[paper\]](#) 02.2023 ~
- Proposed Audio Prompt Adapter to unleash music editing abilities for Text-to-Music
 - Released the code for [Audio Prompt Adapter](#) and [SD-Edit for AudioLDM2](#).

Text-to-Music with RLAIIF , Prof. Shao-Hua Sun, NTU [paper]	09.2023 ~1.2024
<ul style="list-style-type: none"> Used DDPO algorithm to fine-tune AudioLDM2, to enhance the emotion-related text adherence for Text-to-Music models. Our method can boost the clap score of a 5-second music generation by 13%. 	
WiFi Estimatisation for Person Pose , Prof. Hung-Yun Hsieh, NTU	02.2022 ~6.2022
<ul style="list-style-type: none"> Reproduce [Can WiFi Estimate Person Pose?], we used fully convolutional network (FCN) to analyze WiFi data and use teacher forcing from Openpose as ground truth to detect human pose solely by WiFi data. We further utilized PCA and Kalman filter to denoise WiFi data, thus improving the detecting accuracy by 15%. 	

Teaching Experience

Probability and statistics (Spring 2023) , instructed by Prof. Hung-Yun Hsieh, NTU.	02.2022 ~06.2022
<ul style="list-style-type: none"> Evaluated and scored homework, quizzes, and exams for 130 students. Answered questions during office hours every week. 	
Deep Learning for Computer Vision (Fall 2024) , instructed by Prof. Yu-Chiang Frank Wang, NTU.	09.2024 ~12.2024
<ul style="list-style-type: none"> Evaluated and scored programming assignments for 140 students. Organized and hosted a contest for the final project. 	
Reinforcement Learning , instructed by Prof. Shao-Hua Sun, NTU	12.2024
<ul style="list-style-type: none"> Invited as a judge for final project presentation. 	
Research Mentor , Tzu-Chieh Wei (2020 ~, BS student at NTU)	6.2024 ~

Working experiences

Realtek , Software engineering	07.2022 ~08.2022
<ul style="list-style-type: none"> Provided code for converting different audio encoding for audio files. Provided shell script for testing Google TV and Netflix on television chips. 	

Honors and Recognition

Best Creative Award of Robot Car Design Performance NTUEE, against 24 teams.	7.2020
1st prize, 3D Reconstruction from Road Marker Feature Points contest NTUEE, against 15 teams.	02.2020 ~02.2021
SIGMIR scholar , awarded with US\$1000 scholarship	08.2024

Extracurricular Activities

Violinist : Honorable Mention in Violin Solo, National Student's Music Contest	11.2017
Kick-boxer : Member of the NTU Kick-boxing team.	02.2020 ~02.2021
Runner , school's fields day NEHS	2016 ~2018
<ul style="list-style-type: none"> 1st place: 100-meter race 1st place: 400-meter race 2nd place: 200-meter race 	
Runner , school's fields day NTU	2020 ~2024
<ul style="list-style-type: none"> 1st place: 4*100-meter race 2nd place: 4*400-meter race 	