

Yuxuan Wu

AI Researcher & Music Artist

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RESEARCH INTEREST

AI emerges not only for music but also from it. My research interest lies in *self-supervised learning* and *interpretable representation learning*, as well as their applications in audio and music. The core of my research is inspired by the hierarchical nature of human perception, thinking, and communication, with music as their most intriguing manifestation. Building on this, I am dedicated to researching AI that more closely resembles human intelligence, enhancing both AI systems' effectiveness and human artistry.

EDUCATION

Mohamed bin Zayed University of Artificial Intelligence <i>Ph.D. in Machine Learning (Advisor: Prof. Gus Xia and Prof. Bhiksha Raj)</i>	Abu Dhabi, UAE Aug 2023 – Present
Carnegie Mellon University <i>M.Sc. in Music and Technology (Advisor: Prof. Roger Dannenberg)</i>	Pittsburgh, USA Aug 2021 – Aug 2023
Shanghai Jiao Tong University <i>B.Eng. in Information Engineering (Advisor: Prof. Jie Zhu)</i>	Shanghai, China Sep 2017 – Jun 2021

WORKING EXPERIENCE

Machine Learning Department, MBZUAI <i>Teaching Assistant</i> <ul style="list-style-type: none">AI1010: <i>Introduction to AI</i> (First undergraduate cohort)ML8506: <i>Interpretable AI</i> (First offering)ML711: <i>Intermediate Music AI</i> (First offering)ML801: <i>Foundations and Advanced Topics in Machine Learning</i>	Abu Dhabi, UAE Jan 2024 – Present
School of Computer Science, Carnegie Mellon University <i>Teaching Assistant</i> <ul style="list-style-type: none">11-755/18-797: <i>Machine Learning for Signal Processing</i>15-322/15-622: <i>Introduction to Computer Music</i>	Pittsburgh, USA Aug 2022 – May 2023
Speech, Audio and Music Intelligence, TikTok, ByteDance Inc. <i>Research Intern</i>	Santa Clara, USA May 2022 – Aug 2022
AI Lab Speech & Audio, ByteDance Inc. <i>Musician Intern</i>	Shanghai, China Jul 2020 – Jul 2021

PUBLICATIONS

- Yuxuan Wu**, Gus Xia: “Bridging Perceptual and Analytic Dynamics via Function Alignment”, ICLR 2026 Re-Align Workshop.
- Xuanjie Liu*, **Yuxuan Wu***, Ziyu Wang, Gus Xia: “Emergence of Symbolic Language from Perception through Physical Symmetry”, In Submission to *Science*.
- Ziyu Wang, **Yuxuan Wu**, Gus Xia, Roger B. Dannenberg: “Automatic Melody Reduction via Shortest Path Finding”, ISMIR 2025.
- Yuxuan Wu**, Ziyu Wang, Bhiksha Raj, Gus Xia: “Unsupervised Disentanglement of Content and Style via Variance-Invariance Constraints”, ICLR 2025.

Fan Yang, Muqiao Yang, Xiang Li, **Yuxuan Wu**, Zhiyuan Zhao, Bhiksha Raj, Rita Singh: “A Closer Look at Reinforcement Learning-based Automatic Speech Recognition”, Computer Speech and Language 2024.

Yuxuan Wu, Roger B. Dannenberg, Gus Xia: “Motif-Centric Representation Learning for Symbolic Music”, arXiv preprint arXiv:2309.10597 (2023).

Shuqi Dai, Siqi Chen, **Yuxuan Wu**, Ruxin Diao, Roy Huang, Roger B. Dannenberg: “SingStyle111: A Multilingual Singing Dataset with Style Transfer”, ISMIR 2023.

Yuxuan Wu, Yifan He, Xinlu Liu, Yi Wang, Roger B. Dannenberg: “TransPlayer: Timbre Style Transfer with Flexible Timbre Control”, ICASSP 2023 (Oral).

Ruibin Yuan, **Yuxuan Wu**, Jacob Li, Jaxter Kim: “DeID-VC: Speaker De-identification via Zero-shot Pseudo Voice Conversion”, INTERSPEECH 2022.

Xia Liang, Yuan Wan, **Yuxuan Wu**, Bilei Zhu, Zejun Ma: “A Method for Music Texture Generation Based on Markov Chain”, China Patent, 2022.

INVITED TALKS AND GUEST LECTURES

“Towards Human-Like AI by Building Hierarchical Languages of Thought”, AI Art Group, Beijing Institute of General Artificial Intelligence, April 2026

“Emergent Language of Thought in AI: The Birth of Symbols & The Rise of Structure”, Institute for Math & AI, Wuhan University, December 2025

“Music Through the Lens of Machine and Intelligence”, Chengdu University, July 2025

“Introduction to Music AI: Programmer’s Perspective and Machine Composition”, Nanjing University of the Arts, May 2025

“Emergent Content-Style Disentanglement via Variance-Invariance Constraints”, Sound & Music Computing Lab, National University of Singapore, April 2025

“A Glimpse into Self-Supervised Music Concept Discovery”, Nanjing University of the Arts, June 2024

“A to I: Music Cocreation with AI”, Music AI Group, Mila - Quebec AI Institute, Feb 2023

HONORS AND AWARDS

Google PhD Fellowship 2025: University Nominee, MBZUAI

AI Song Contest 2022: 3rd Place – Team “3+i”, song “A to I” (from the album *Fallen Florets*)

CSMT Music Exhibition 2020: 2nd Prize – experimental multimedia project “Project Ming” (with Xinyue Zhu)

Think Youth Digital Creation Competition 2020: 3rd Prize – song “Feather” (from the album *Previous Track, Pause*)

SJTU Annual Singer Contest 2018: 3rd Place

SJTU Merit Student 2018