NTUEE 大學部專題說明會 • 4 August 2023

Music and AI Lab

Lab Intro

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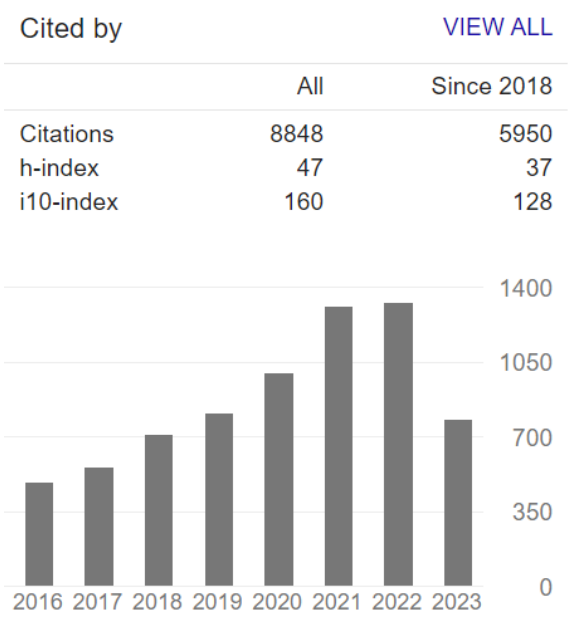
About Me

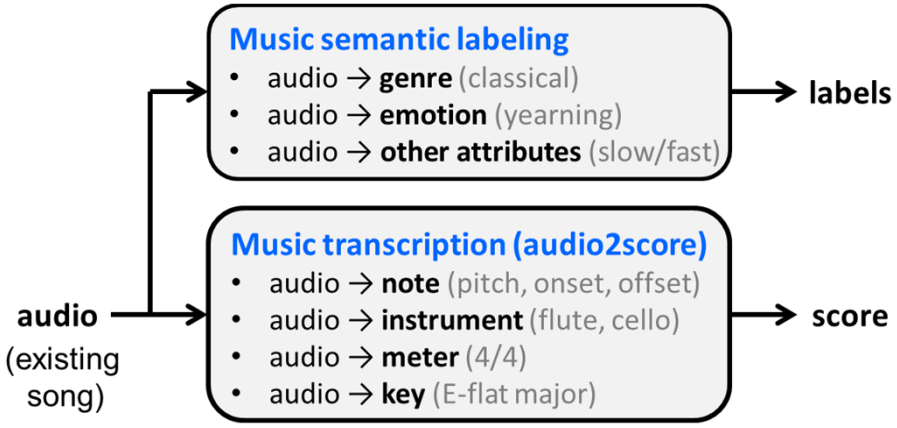
2010	**Ph.D.** National Taiwan University (B91; D95)
2011-2023	**PI**, *Music & AI Lab*, Academia Sinica
2019-2023	**Chief Music Scientist**, Taiwan AI Labs
since Feb 2023	**PI**, *Music & AI Lab*, National Taiwan University

TITLE	CITED BY	YEAR
A regression approach to music emotion recognition YH Yang, YC Lin, YF Su, HH Chen Audio, Speech, and Language Processing, IEEE Transactions on 16 (2), 448-457	574	2008
MuseGAN: Multi-track sequential generative adversarial networks for symbolic music generation and accompaniment HW Dong, WY Hsiao, LC Yang, YH Yang Thirty-Second AAAI Conference on Artificial Intelligence	550	2018
MidiNet: A convolutional generative adversarial network for symbolic-domain music generation LC Yang, SY Chou, YH Yang ISMIR	519	2017
⋮		
Pop music transformer: Beat-based modeling and generation of expressive pop piano compositions YS Huang, YH Yang Proceedings of the 28th ACM international conference on multimedia, 1180-1188	199 *	2020



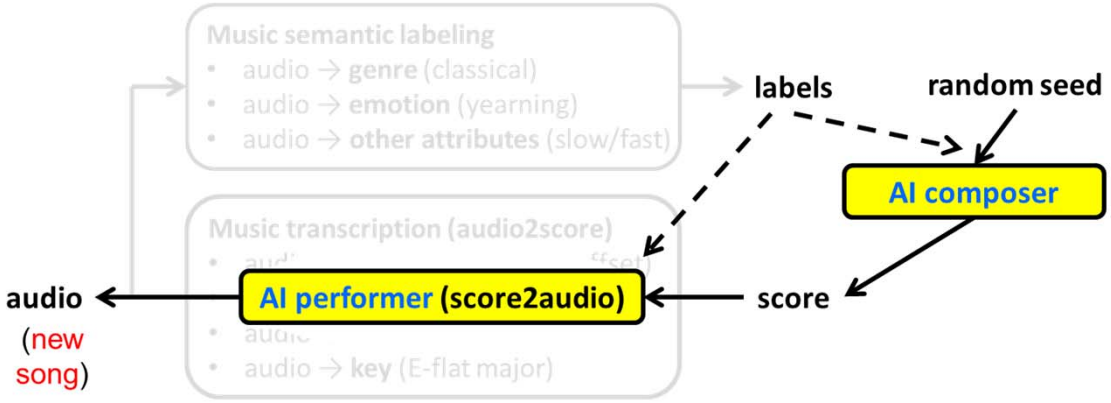
Music AI; or Music Information Research (MIR)

- **Music analysis**



  - music understanding
  - music search
  - music recommendation

- **Music generation**



  - MIDI generation
  - audio generation
  - MIDI-to-audio generation

About the Lab

https://affige.github.io/lab.html

Information for prospective students

Prerequisites

- **Deep interest in music**
- **Good background in machine learning and mathematics** (e.g., have taken courses such as Machine Learning, Deep Learning, Signals and Systems, Digital Signal Processing, Linear Algebra, Probability and Statistics)
- **Good coding experience in python and a deep learning framework** such as PyTorch

More Info About Me & the Lab

AI人物誌

音樂與人工智慧的無限可能—專訪楊奕軒

https://case.ntu.edu.tw/blog/?p=38833

台大電機精專獎得獎心得

音樂科技研究的心路歷程

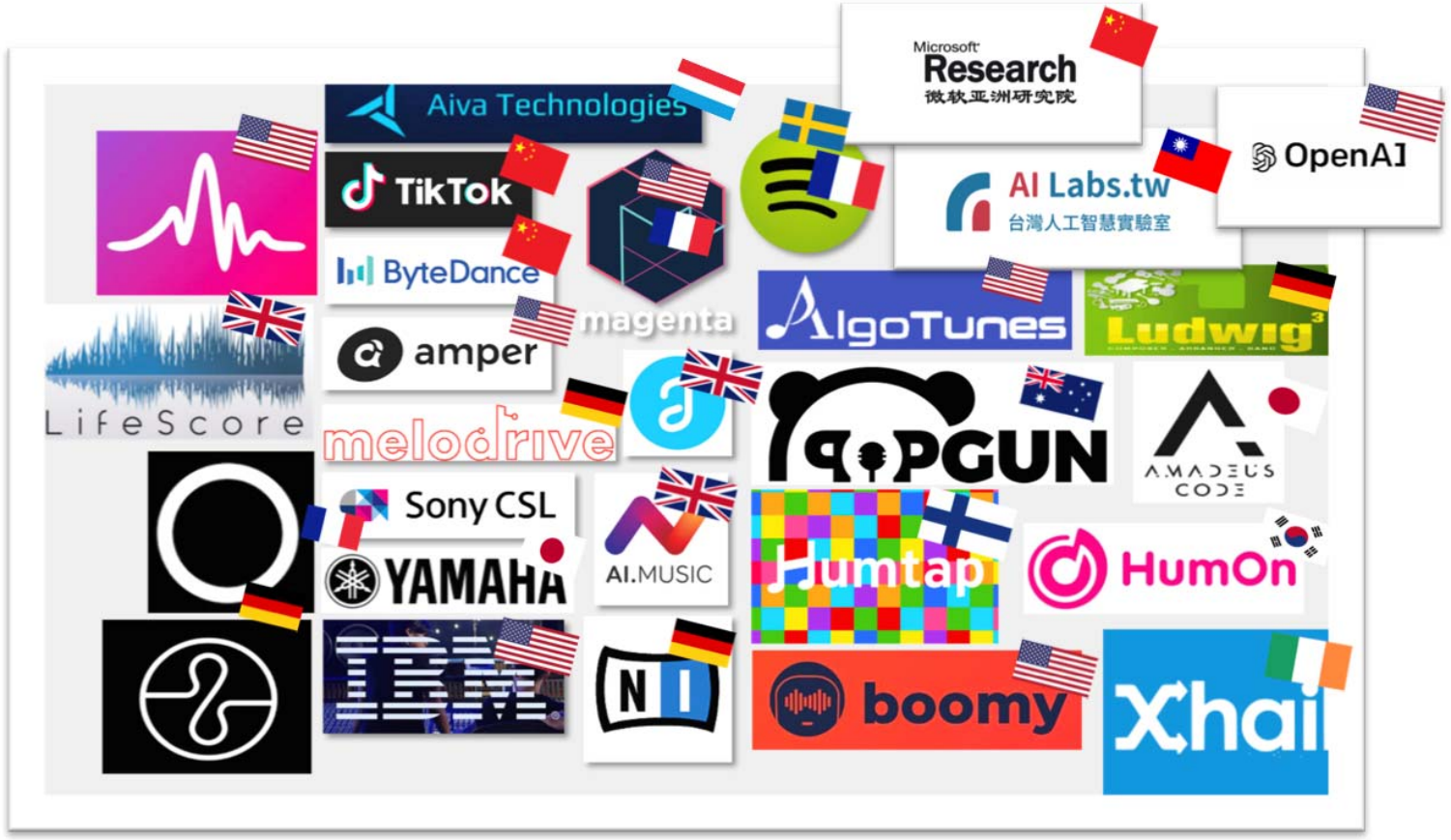
施貽仁 · Follow
Aug 15, 2022

https://medium.com/@ato950231/%E5%8F%B0%E5%A4%A7%E9%9B%BB%E6%A9%9F%E7%B2%BE%E5%B0%88%E7%8D%8E%E5%BE%97%E7%8D%8E%E5%BF%83%E5%BE%97-7f6fd93ecc67

New Course

80489	GRADUATE INSTITUTE OF COMMUNICATION ENGINEERING	CommE5070		Deep Learning for Music Analysis and Generation		3.0	942 U0840	Half	Elective	Yi-Hsuan Yang	2	Thu7,8,9E.E. BLDG. NO.2 ROOM NO.229(電二229)

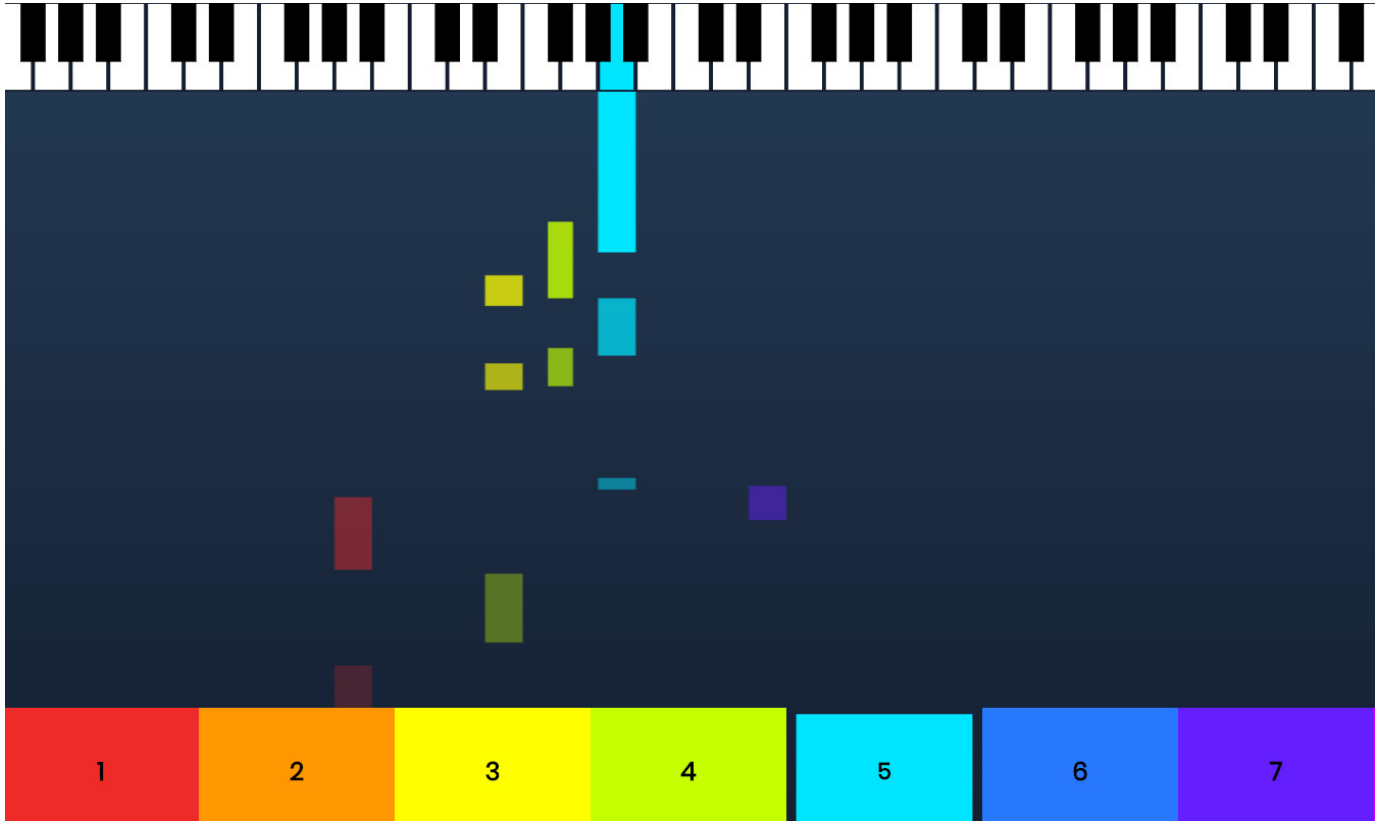
Global Interest in Music AI



(**Slide from Rujing Huang, Bob L. T. Sturm, and Andre Holzapfel**, "De-centering the West: East Asian Philosophies and the Ethics of Applying Artificial Intelligence to Music," ISMIR 2021)

Demo 1: Piano Genie

https://magenta.tensorflow.org/pianogenie



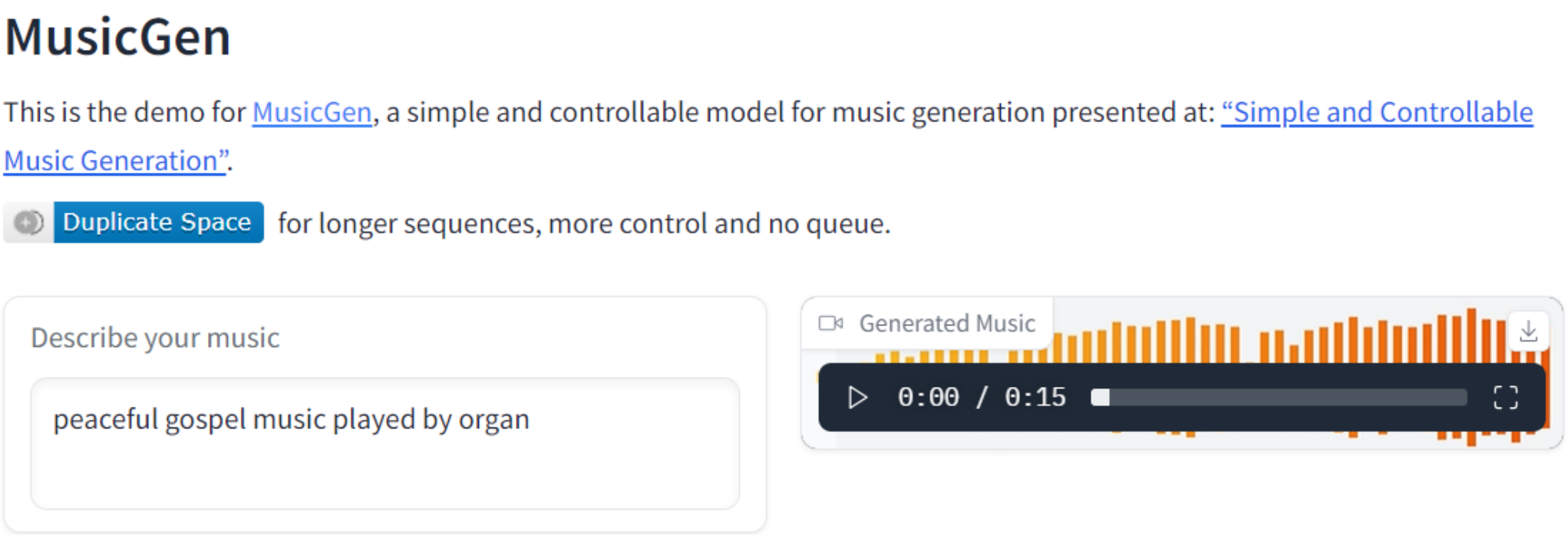
Demo 2: Tone Transfer

https://sites.research.google/tonetransfer

Demo 3: Text-to-Music

https://ai.honu.io/papers/musicgen/

https://huggingface.co/spaces/facebook/MusicGen



Demo 4: AI MV

https://www.ziaxaza.com/

Demo 5: KaraSinger

https://jerrygood0703.github.io/KaraSinger/

Lyrics:
In this paper we propose
a novel neural network model
called Karaoke singer for a less studied
singing voice synthesis task
named score-free SVS
in which the prosody and melody are
spontaneously decided by machine.

Demo 6: AI Sandee

https://www.youtube.com/watch?v=nWTuZIRU80A

「音樂製作人的工作是無法被取代的」。AI vocal 要怎麼唱，能唱得多好，終究需要專業音樂製作人，以人類的美學和經驗去引導 AI，要如何將 AI 昇華到情感面，終究還是需要製作人的能力，以及對音樂的想像力。

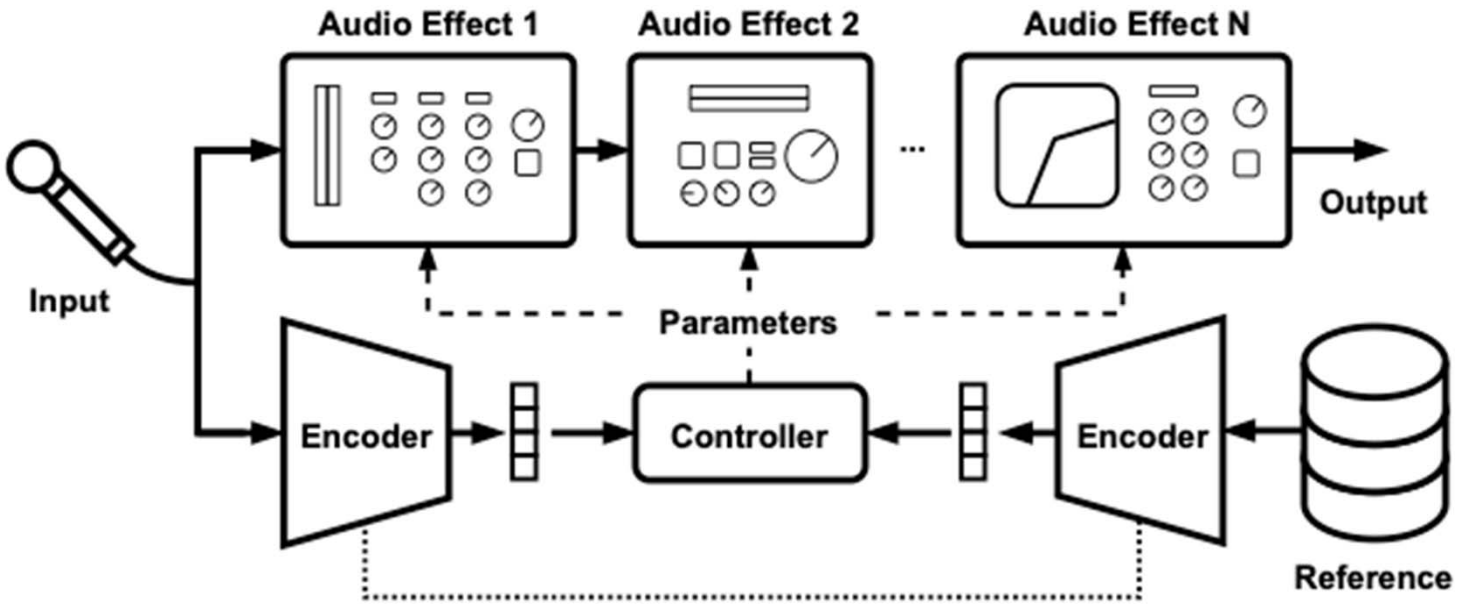
作為一個仍在線上的歌手與製作人，由我親自處理自己的AI vocal，讓這首歌傳達出「創作者、歌者不怕 AI 的挑戰」、「我們擁有自己聲音的控制權」等訊息，同時也是「人類的思考和意志，才是人之所以為人」的巨大宣示。

透過聆聽《教我如何做你的愛人》，試著探討：「若 AI 已經能模擬原唱的一切，那麼原唱歌手的價值會是什麼？」

當 AI 真正學會唱歌之後，就是創作人與歌手，重新理解自身價值的時候了。....by公主

Demo 7: Mixing Style Transfer

https://csteinmetz1.github.io/DeepAFx-ST/



Lab Culture

https://affige.github.io/lab.html

- Work as a team rather than lots of individual projects
- Work on meaningful projects that are related to the lab and that can have some impact rather than random ideas
- Aim high yet set milestones along the way
- Open source code
- Open to collaboration with the industry
- Open to collaboration with labs around the world (via internships or remote collaboration; we have many papers with international collaborators)

Write to Me: yhyangtw@ntu.edu.tw

With a **CV** and/or some description of

- Yourself
- Your connection with **music**
- Your background in **ML/DL**

Appendix: How If I Know Nothing About Deep Learning?

- Do your homework…
  https://speech.ee.ntu.edu.tw/~hylee/index.php