

Yun-Ning (Amy) Hung

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Education

- M.S. in Music Technology**, Georgia Institute of Technology, USA 2019-2021
- First year master project - **Music source separation**: researched on multitask frameworks to integrate instrument activation detection with music source separation [7]
 - Second year master project - **Transfer learning**: researched on integrating pre-trained embedding on various MIR downstream tasks [2] [3] [12]
 - Relevant courses: Audio Content Analysis, Machine Learning, Interactive Music
- B.S. in Electrical Engineering**, National Cheng Kung University (NCKU), Taiwan 2012 - 2016
- UW-Madison Exchange Program**, University of Wisconsin-Madison, USA Fall 2015

Work Experience

- Research Engineer** at TikTok Inc. 2022 - Present
- Research and improve a variety of music information retrieval systems, such as beat tracking, structure analysis, chord recognition, transcription, etc.
 - Deploy machine learning systems for products.
 - Building machine learning infrastructure.
- Research Intern** at TikTok Inc. 2020 Summer
- Researched on knowledge-based loss functions to improve music structure analysis. [5]
 - Researched on modeling beat/downbeat detection with transformer. [4]
- Audio Algorithm Intern** at Netflix 2020 Fall
- Researched on automatic speech/music detection, and speech/music separation.
 - Built a large-scale open-source dataset for speech/music detection in TV shows' audio. [1] [13]
- Research Assistant** at Georgia Institute of Technology 2019 - present
- Researched on incorporating musical score with deep learning methods for the objective assessment of music performance. [8]
 - Servers maintenance: updating linux and GPUs, deep learning environment setup, etc.
- Research Intern** at Mitsubishi Electric Research Laboratories (MERL) 2020 Summer
- Researched on using adversarial training and musical score information for weakly-supervised music source separation. [6]
- Research Assistant** at Academia Sinica, the National Academy of Taiwan 2017 - 2019
- Researched on automatic instrument recognition, music transcription and embedding disentanglement. [10] [11] [14]
 - Presented at three conferences, several seminar talks, and one invited talk at the *6th Taiwanese Music and Audio Computing workshop*.
- Research Assistant** in the Industrial Collaboration program with KKBOX Inc., the largest online music streaming company in Taiwan 2017 - 2019
- Analyzed large-scale audio and lyrics datasets with Python framework (Numpy, Scikit-learn, etc).
 - Researched on improving music classification models for music recommendation. [15]
 - Researched on instrument rearrangement for AI music creation. [9]
- Software Engineer Intern** at Amy.app, a New Zealand based online AI tutoring company 2019 Summer
- Researched on modeling math equations with machine learning methods to automatically solve junior and senior high school math questions.
 - Developed typescript algorithm for multi-language feedback generation.

Academic Experience

Journal Articles

1. **Hung, Y. N.**, Wu, C. W., Orife, I., Hipple, A., Wolcott, W., & Lerch, A., "A large TV dataset for speech and music activity detection." *Journal on Audio, Speech, and Music Processing (EURASIP)*, 2022.

Peer-reviewed Conference Papers

2. **Hung, Y. N.**, & Lerch, A., "Feature-informed Embedding Space Regularization For Audio Classification", *European Signal Processing Conference (EUSIPCO)*, 2022.
3. **Hung, Y. N.**, & Lerch, A., "Feature-informed Latent Space Regularization for Music Source Separation", *Digital Audio Effect Conference (DAFx)*, 2022.
4. **Hung, Y. N.**, Wang, J. C., Song, X., Lu, W. T., & Won, M., "Modeling Beats and Downbeats with a Time-Frequency Transformer", *IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2022.
5. Wang, J. C., **Hung, Y. N.**, & Smith, J. B. L., "To catch a chorus, verse, intro, or anything else: Analyzing a song with structural functions", *IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2022.
6. **Hung, Y. N.**, Wichern, G., & Roux, J. L., "Transcription Is All You Need: Learning to Separate Musical Mixtures with Score as Supervision", *IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2021.
7. **Hung, Y. N.**, & Lerch, A., "Multitask learning for instrument activation aware music source separation", *International Society for Music Information Retrieval Conference (ISMIR)*, 2020
8. Huang, J., **Hung, Y. N.**, Pati, A., Gururani, S. K., & Lerch, A., "Score-informed Networks for Music Performance Assessment", *International Society for Music Information Retrieval Conference (ISMIR)*, 2020
9. **Hung, Y. N.**, Chiang, I., Chen, Y. A., & Yang, Y. H., "Musical Composition Style Transfer via Disentangled Timbre Representations", *International Joint Conferences on Artificial Intelligence (IJCAI)*, 2019 (*17% acceptance rate*)
10. **Hung, Y. N.**, Chen, Y. A., & Yang, Y. H., "Multitask learning for frame-level instrument recognition", *IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2019.
11. **Hung, Y. N.**, & Yang, Y. H., "Frame-level Instrument Recognition by Timbre and Pitch", *International Society for Music Information Retrieval Conference (ISMIR)*, 2018

Others

12. **Hung, Y. N.**, Yang, C. H. H., Chen, P. Y., & Lerch, A., "Low-Resource Music Genre Classification with Advanced Neural Model Reprogramming", *arXiv preprint arXiv:2211.01317*.
13. **Hung, Y. N.**, Watcharasupat, K. N., Wu, C. W., Orife, I., Li, K., Seshadri, P., & Lee, J., "AVASpeech-SMAD: A Strongly Labelled Speech and Music Activity Detection Dataset with Label Co-Occurrence", *International Society for Music Information Retrieval Conference Late Breaking Demo*, 2021
14. **Hung, Y. N.**, Chen, Y. A., & Yang, Y. H., "Learning Disentangled Representations for Timber and Pitch in Music Audio", *arXiv preprint arXiv: 1811.03271*, Nov. 2018.
15. Yu, L. C., Yang, Y. H., **Hung, Y. N.**, & Chen, Y. A., Hit Song Prediction for Pop Music by Siamese CNN with Ranking Loss, *arXiv preprint arXiv: 1710.10814*, Oct. 2017.

Reviewed Journals/Papers

- IEEE International Conference on Acoustics, Speech and Signal Processing, 2023
- IEEE International Conference on Multimedia & Expo, 2022
- IEEE Transactions on Audio, Speech and Language Processing, 2020-2021

Skills

Machine Learning	Language: Python Tools: PyTorch, Pytorch-lightning, TFLearn, Numpy, Scikit-learn, Matplotlib, Librosa
Web & Applications	Language: HTML, Javascript, CSS, Typescript, PHP, SQL, Java, Object-C Tools: Ionic, Unity
Musical Tools	Sonic Visualiser, Max/MSP, FFmpeg
Others	Git, Linux, Latex
Spoken	Chinese (mother tongue), English (fluent), Taiwanese (listen), Spanish (read & listen)
Musical Instruments	Piano, Flute, Guitar, Ukulele, Double Bass, Cajon

Awards

Government Scholarship to Study Abroad , Ministry of Education, Taiwan	2020-2021
WIMIR Travel Grant , International Society for Music Information Retrieval Conference	2018
Study Abroad Scholarship , Electrical Engineering Department, National Cheng Kung University	Fall 2015
Academic Excellence Award (Top 10% students in the department), National Cheng Kung University	2013 - 2014