

# Joann Ching

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## Education

- M.S. in Music Technology**, Georgia Institute of Technology, USA 2021 - Now  
• Relevant courses: Audio Content Analysis, Statistics of Machine Learning, Recording & Mixing
- Professional Studies Program**, The National Chiao Tung University, Taipei, Taiwan 2019 Fall  
• Relevant courses: Algorithms
- B.M. in Music Performance**, The University of Texas at Austin, USA 2015 - 2019  
• Relevant courses: Music Theory, Music History, Data Science, Elements to Software Engineering

## Work Experiences

- Summer Science Intern** at Pandora/SiriusXM Summer 2022  
• Research on methods of creating audio embeddings for downstream classification tasks  
• Extensively worked on the Google Cloud Platform for developing a ML infrastructure
- Research Assistant** at Academia Sinica, the National Academy of Taiwan 2019 - 2021  
• Researched on deep learning algorithms with PyTorch and TensorFlow for automatic music classification/auto-tagging, music generation, beat detection and music transcription  
• Published at three conferences and presented at several seminar talks

## Academic Experiences

### Peer-Reviewed Publications

- [1] Hung, H-T., **Ching, J.**, Doh, S-H., Kim, N., Nam, J., Yang, Y-H. “EMOPIA: A Multi-Modal Pop Piano Dataset for Emotion Recognition and Emotion-based Music Generation.”, *International Society for Music Information Retrieval (ISMIR)*, 2021
- [2] Chiu, C-Y., **Ching, J.**, Hsiao, W-Y., Chen, Y-H., Su, W-Y., Yang, Y-H. “Source Separation-based Data Augmentation Techniques for Improved Joint Beat and Downbeat Tracking in Classical Music”. *European Signal Processing Conference (EUSIPCO)*, 2021
- [3] **Ching, J.**, Ramires, A., Yang, Y-H. “Instrument Role Classification: Auto-tagging for Loop Based Music.” *Joint Conference on AI Music Creativity (2020)*. ISBN: 978-91-519-5560-5
- [4] Ramires, A., Font, F., Bognadov, D., Smith, J. B. L., Yang, Y-H., **Ching, J.**,...Serra, X. “The FreeSound Loop Dataset and Annotation Tool.” *International Society for Music Information Retrieval (ISMIR)*, 2020

### Non-refereed Publications

- [5] **Ching, J.**, Yang, Y-H. “Learning to Generate Piano Music with Sustain Pedals,” *Late-Breaking Demos of the 18th International Society for Music Information Retrieval Conference (ISMIR)*, 2021. *arXiv preprint arXiv:2111.01216*
- [6] Chou, I-H., Chen, I-C., Chang, C-J., **Ching, J.**, Yang, Y-H. “MidiBERT-Piano: Large-scale Pre-training for Symbolic Music Understanding”. *arXiv preprint arXiv:2107.05223*, 2021

### Poster Presentations

- Learning to Generate Piano Music with Sustain Pedals, *International Society for Music Information Retrieval (ISMIR)*, Atlanta, Georgia(Virtual Conference), 2021
- Instrument Role Classification: Auto-tagging for Loop Based Music, *Joint Conference on AI Music Creativity (CSMC+MuMe)*, Stockholm, Sweden (Virtual Conference), 2020

### Professional Involvement

- Presenter, 22nd ISMIR (International Society for Music Information Retrieval)
- Attendee, 7th TMAC Workshop (Taiwanese Music and Audio Computing Workshop)
- Presenter, 2021 CSMC+MuMe (Joint Conference on AI Music Creativity)
- Volunteer, 21<sup>st</sup> ISMIR (International Society for Music Information Retrieval)

- Reviewer, 21<sup>st</sup> ISMIR (International Society for Music Information Retrieval)
- Mentee, WiMIR (Women in Music Information Retrieval)

## Research Projects

### Piano Sustain Pedal Detection with Time-Frequency Attention

2022 - Now

*Master project advised by Dr. Alexander Lerch, GaTech*

- Exploration of the effect of piano sustain pedal usage on its acoustic characteristics
- Adding the attention mechanism to learning the sustain pedal events in real-world recordings
- Compared our implementations with various baselines

### Pitch Tracking for Polyphonic Music

2021 Fall

*Research lab project advised by Dr. Claire Arthur, GaTech*

- Leverage of my music theory knowledge for error analysis on existing works of f0 estimation
- Building new machine learning system based on the analysis results

### Optimization of Guitar Tablature Transcription Using Beat Information

2021 Fall

*Audio Content Analysis course project supervised by Prof. Alexander Lerch, GaTech*

- Proposed a system that incorporates beat information during data preprocessing to improve the transcription result
- Research on guitar pitch tracking/tablature transcription, and beat detection algorithm

### EMOPIA Dataset [1]

2020 - 2021

*Advised by Dr. Yi-Hsuan Yang, Academia Sinica, and Dr. Juhan Nam, KAIST*

- Compiled the EMOPIA dataset for future research on emotion-related tasks in MIR
- Designed new model architecture to generate symbolic piano music with a target emotion
- Compared the results with baseline models and tested with classification tasks

### Beat Tracking for Classical Music [2]

2021 Spring

*Advised by Dr. Yi-Hsuan Yang, Academia Sinica.*

- Analyze and modify the model based on the behaviors with domain knowledge in classical music
- Designed new model architecture and training data to improve detection results on classical music

## Technical Skills

### Machine Learning

Language: Python

### Research

Tools: PyTorch, TensorFlow, Numpy, Scikit-learn, Matplotlib, Librosa,

Music Information Retrieval, Machine Learning, Data Analysis, Statistics, Audio Signal Processing

### Others

Git, Linux, Latex, HTML, JavaScript, CSS, SQL

### Musical Skills

Violin, Piano, Percussion, Conducting, Music Theory, Music History

## Awards

**Dean's Fellowship**, School of Music, Georgia Institute of Technology

2021 - 2022

**The Butler School of Music Scholarship**, The University of Texas at Austin

2015 - 2019

## Other Experiences

**Georgia Tech Symphony Orchestra**

2021 Aug. - Now

**Philharmonia Moments Musicaux**

2020 - 2021

**Butler Opera Center Orchestra**

2019 April - May

**SXSW Audio Engineer**

2018 March

**University of Texas Symphony Orchestra**

2015 - 2019

**National Taiwan University Symphony Orchestra Concert Tour**

2017 Jul. - Aug.