

Joann Ching

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Education

M.S. in Music Technology, Georgia Institute of Technology, USA 2021 - 2023

- Master Project - Acoustic Analysis and Detection for Piano Sustain Pedal
- Relevant courses: DSP, Stat. for Machine Learning (Linear Algebra required), Music Perc.&Cog.

Professional Studies Program, The National Chiao Tung University, Taipei, Taiwan 2019 Fall

- Relevant courses: Data Structure/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
- Implemented the target task using such embeddings using CNN architectures for comparison of limitation in different tasks
- Extensively worked on Google Cloud Platform for developing and maintaining 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
- Published at three conferences and presented at several seminar talks

Research Projects

Analysis and Detection of Sustain Pedal Information 2022 - Now

Master project advised by Dr. Alexander Lerch, GaTech

- Analysis on the acoustic characteristics of multiple depths of the piano sustain pedal
- Apply time and frequency attention mechanism for the detection of pedal events in real-world recordings using a simple CNN architecture towards explainability
- Compared our implementations against various baselines
- In preparation for a journal submission

Pitch Tracking for Polyphonic Music 2021 Fall

Research 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

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

Technical Skills

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| Machine Learning | Language: Python Tools: PyTorch, TensorFlow, Numpy, Scikit-learn, Matplotlib, Librosa, |
| Research | Music Information Retrieval, Machine Learning, Data Analysis, Statistics, Audio Signal Processing |
| Others | SQL, JavaScript, CSS, Git, HTML, Linux, Latex |
| Musical Skills | Violin, Piano, Percussion, Conducting, Music Theory, Music History |

Awards

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| 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

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| 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. |