# Joann Ching

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## Education

**PhD in Computer Science,** Johannes Kepler University, Linz, Austria *2024 - present*
- Computational Modeling and Analysis for Expressive Musical Performance

**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, Statistics for Machine Learning, Music Perception and Cognition

**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*
- Completed all coursework in Computer Science, one course short of a minor.

## 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 Experiences

Peer-Reviewed Publications

[1] *Manuscript in preparation for submission to Frontiers in Psychology.*

[2] **Ching, J.**, Widmer, G. “Learning to Predict Performance-induced Emotion Differences in Classical Piano Music”, *International Society for Music Information Retrieval (**ISMIR**)*, 2026

[3] **Ching, J.**, Widmer, G. “A Study on the Data Distribution Gap in Music Emotion Recognition”, *17th International Symposium on Computer Music Multidisciplinary Research (**CMMR**)*, 2025

[4] Chou, Y-H., Chen, I-C., Chang, C-J., **Ching, J.**, Yang, Y-H. “BERT-like Pre-training for Symbolic Piano Music Classification Tasks”, *Journal of Creative Music Systems*, 2024

[5] 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

[6] 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

[7] **Ching, J.**, Ramires, A., Yang, Y-H. “Instrument Role Classification: Auto-tagging for Loop Based Music.” *Joint Conference on AI Music Creativity*. ISBN: 978-91-519-5560-5, 2020

[8] 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

[9] **Ching, J.**, Cancino-Chacón, C. E., Widmer, G., “R3MO: A Multi-modal Dataset for Emotion Analysis in Orchestral Music", *International Conference on Computational and Cognitive Musicology (ICCCM)*, 2026

[10] Nikolakakis, E., **Ching, J.**, Karystinaios, E., Sipin, G., Widmer, G., Marinescu, R., "Language Models for Music Medicine Generation", *Late-Breaking Demos of the 25th International Society for Music Information Retrieval Conference (ISMIR)*. arXiv preprint arXiv:2411.09080, 2024

[11] **Ching, J.**, Yang, Y-H. "Learning to Generate Piano Music with Sustain Pedals," *Late-Breaking Demos of the 22nd International Society for Music Information Retrieval Conference (ISMIR). arXiv preprint arXiv:2111.01216,* 2021

[12] Chou, Y-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

Talks

- 2026-05-09: Towards Understanding Emotion in Music, Applied Machine Learning Conference (ALMC), Poznań, Poland

Reviews

- International Society for Music Information Retrieval (2021, 2024 - present)
- Sound and Music Computing (2025 - present)
- IEEE Transactions on Affective Computing (TAFFC) (2025 - present)
- Transactions of the International Society for Music Information Retrieval (TISMIR) (2025 - present)
- Journal of New Music Research (JNMR) (2026)
- NeurIPS Workshop on AI for Music (2025)
- Latin American Music Information Retrieval (LAMIR) (2025 - present)

## Selected Research Projects

**Analysis and Detection of Sustain Pedal Information** *2022 - 2023*

*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

## Technical Skills

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|---|---|
| **Machine Learning** | Language: Python<br>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

**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*

## Musical Experiences

**Georgia Tech Symphony Orchestra (Concertmaster)** *2021 - 2022*

**Philharmonia Moments Musicaux (Principal Second Violin)** *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.*