Dr. Beici Liang

Last updated: April, 2023

Email: beici.liang@foxmail.com
Website: beiciliang.github.io
7014 Trondheim
Norway

- Music technologist experienced in AI, Machine Learning, and Data Science
- Passionate about introducing music tech to the public as a Popular Science Writer
- Skill in Python, JavaScript, SQL, Docker, Linux, Cloud Engineering, and other DevOps
- Good communication and presentation skills in English, Chinese, and Norwegian
- Aim to build multimodal solutions for the automatic description, retrieval and discovery of big data

Working Experience

Nov. 2021 – now
R&D Manager
SPARWK AS, Norway
Developed AI algorithms for music entity linking system and audio-based information retrieval services, e.g., genre detection, tempo estimation, etc.; Filed 4 patents for the systems and methods used in artists and repertoire (A&R).

May 2021 – Oct. 2021
Technical Lead
Deus Vault UK Ltd., Remote
Developed APIs for music identification services to detect copyright infringement.

Sept. 2019 – April 2021
Senior Research Engineer
Tencent Music Entertainment (TME), China
Developed end-to-end AI models for music auto-tagging, structural segmentation, large scaled singer recognition, and audio embeddings for music recommendation; Provided a better understanding of the music content for over 20 million tracks, and benefited over 800 million users in China via the QQ Music App; Published 5 conference papers and 3 patents, and awarded with the Annual Technology Breakthrough.

Education

2014 – 2019
PhD in Media and Arts Technology
School of Electronic Engineering and Computer Science
Queen Mary University of London (QMUL), United Kingdom
Research Group: Centre for Digital Music (C4DM)
Supervisors: Mark Sandler, George Fazekas, Andrew McPherson
Thesis: Modelling Instrumental Gestures and Techniques - A Case Study of Piano Pedalling

2018
Summer Workshop Student
Deep Learning for Music Information Retrieval I & II
Centre for Computer Research in Music and Acoustics (CCRMA)
Stanford University, USA

2010 – 2014
BEng in Integrated Circuit Design and Integrated System
School of Electronic Information Engineering
Tianjin University (TJU), China
Grade: 88/100

Awards & Scholarships

2020 – 2025 **Overseas High-Caliber Personnel**. *Shenzhen Municipal Government*, China.

2021 **Annual Technology Breakthrough**. *Tencent Music Entertainment*, China.

2014 – 2019 **EPSRC and AHRC Centre for Doctoral Training in Media and Arts Technology**. *Queen Mary University of London*. Award: EP/L01632X/1. More information: MAT CDT.

2014 – 2019 **Project Team Member of EPSRC Grant "Fusing Semantic and Audio Technologies for Intelligent Music Production and Consumption"**. *Queen Mary University of London*. Award: EP/L019981/1. More information: FAST IMPACt.

2014 – 2018 **Chinese Government Scholarship**. *China Scholarship Council*. Award: 201406250007.

2018 **Full Tuition Scholarship** for attending CCRMA Summer Workshop. *Stanford University*, USA.

2017 **Women in MIR Grant**. *The 18th International Society for Music Information Retrieval Conference*, Suzhou, China.

2017 **Best Poster Award**. *The 12th International Audio Mostly Conference*, London, UK.

2014 **Distinguished Graduate Award**. *Tianjin University*, China.

Teaching Experience

2020 **Guest Lecturer**, Chapter 4.1 of Audio and Music Technology, China MOOC.

2018 – 2019 **Guest Lecturer**, Software Carpentry Workshop of ECS719P Research Method, QMUL.

2017 – 2019 **Teaching Assistant**, ECS735 The Semantic Web, QMUL.

2018 **Teaching Assistant**, ECS602 Digital Signal Processing, QMUL.

2015 **Teaching Assistant**, ECS742 Interactive Digital Media Techniques, QMUL.

2013 – 2014 **Piano Tutor**, Keyboard Training Centre, TJU.

Open-source Projects

2018 – now **intro2musictech**
Introduce music technology to Chinese audiences and build MIR communities in China. 12k+ followers on Zhihu and 2k+ subscribers on WeChat Official Account.

2018 – 2019 **sustain-pedal-detection**
Python implementations for piano sustain pedal detection.

2018 **modelAttackDecay-for-piano-transcription**
Python implementations of an attack/decay model for piano transcription.

2018 **estimate-f0-inharmonicity**
Python implementations for estimating the fundamental frequency and inharmonicity coefficient of an isolated piano note.

Miscellaneous

Reviewer

- IEEE Transactions on Affective Computing
- International Society for Music Information Retrieval Conference
- International Conference on Digital Audio Effects
- China Conference on Sound and Music Technology

Memberships

- International Society for Music Information Retrieval
- IEEE Membership
- IEEE Signal Processing Society Membership
- IEEE Young Professionals
- Audio Engineering Society

Volunteers

- Scientific Program Chair of the 24th International Society for Music and Information Retrieval Conference (ISMIR 2023)
- Women in Music Information Retrieval (WiMIR)
- Member of the Local Organising Committee for the 12th International Audio Mostly Conference
- Deputy Head and Alto of Peiyang Chorus 2010-2014
- Interpreter at Tianjin Grand Theatre 2012

Publications

PhD Thesis

2019 **Liang, B**. "Modelling Instrumental Gestures and Techniques: A Case Study of Piano Pedalling". PhD thesis. Queen Mary University of London.

Journal Articles

2018 **Liang, B**, G. Fazekas, and M. Sandler. "Measurement, Recognition, and Visualization of Piano Pedalling Gestures and Techniques". *Journal of the Audio Engineering Society* 66.6 (2018), pp. 448-456. doi:10.17743/jaes.2018.0035.

Peer-reviewed Conference Proceedings

2021 K. Chen, **Liang, B**, X. Ma, and M. Gu. "Learning Audio Embeddings with User Listening Data for Content-Based Music Recommendation". In: *2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. pp. 3015-3019. doi:10.1109/ICASSP39728.2021.9414458.

2021 S. Hu, **Liang, B**, Z. Chen, X. Lu, E. Zhao, and S. Lui. "Large-Scale Singer Recognition Using Deep Metric Learning: An Experimental Study". In: *2021 International Joint Conference on Neural Networks (IJCNN)*. pp. 1–6. doi:10.1109/IJCNN52387.2021.9533911.

2020 S. Hu, B. Zhang, **Liang, B**, E. Zhao, and S. Lui. "Phase-Aware Music Super-Resolution Using Generative Adversarial Networks". In: *Interspeech 2020*. pp. 4074–4078. doi:10.21437/Interspeech.2020-2605.

2019 **Liang, B**, G. Fazekas, and M. Sandler. "Transfer Learning for Piano Sustain-Pedal Detection". In: *2019 International Joint Conference on Neural Networks (IJCNN)*. pp. 1-6. doi:10.1109/ijcnn.2019.8851724.

2019 **Liang, B**, G. Fazekas, and M. Sandler. "Piano Sustain-Pedal Detection Using Convolutional Neural Networks". In: *2019 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. pp. 241-245. doi:10.1109/ICASSP.2019.8683505.

2018 **Liang, B**, G. Fazekas, and M. Sandler. "Piano Legato-Pedal Onset Detection based on a Sympathetic Resonance Measure". In: *2018 26th European Signal Processing Conference (EUSIPCO)*. pp. 2484-2488. doi:10.23919/EUSIPCO.2018.8553341.

2017 **Liang, B**, G. Fazekas, and M. Sandler. "Detection of Piano Pedalling Techniques on the Sustain Pedal". In: *143rd Audio Engineering Society Convention*.

2017 **Liang, B**, G. Fazekas, and M. Sandler. "Recognition of Piano Pedalling Techniques Using Gesture Data". In: *12th International Audio Mostly Conference on Augmented and Participatory Sound and Music Experiences*. pp. 1-5. doi:10.1145/3123514.3123535.

2017 **Liang, B**, G. Fazekas, A. McPherson, and M. Sandler. "Piano Pedaller: A Measurement System for Classification and Visualisation of Piano Pedalling Techniques". In: *International Conference on New Interfaces for Musical Expression (NIME'17)*. pp. 325–329. doi:10.5281/zenodo.1176268

Poster and Workshop Presentations

2020 **Liang, B**, Z. Cai, Q. Chen, Y. Li, and M. Gu. "Novel Audio Embeddings for Personalized Recommendations on Newly Released Tracks". In: *Machine Learning for Media Discovery Workshop at the International Conference on Machine Learning (ICML)*.

2020 **Liang, B**, and M. Gu. "Music Genre Classification Using Transfer Learning". In: *Workshop on Artificial Intelligence for Art Creation at the IEEE International Conference on Multimedia Information Processing and Retrieval (MIPR)*. pp. 392-393. doi:10.1109/mipr49039.2020.00085.

2017 **Liang, B**, G. Fazekas, and M. Sandler. "Towards the Detection of Piano Pedalling Techniques from Audio Signal". In: *Late-Breaking Demo Session of the 18th International Society for Music Information Retrieval Conference (ISMIR)*.

2015 **Liang, B**, G. Fazekas, and M. Sandler. "The Organ Web App". In: *Late-Breaking Demo Session of the 16th International Society for Music Information Retrieval Conference (ISMIR)*.