Dr. Beici Liang

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7014 Trondheim
Norway

- Audio technologist experienced in Machine Learning, Information Retrieval, and Cloud Infrastructure
- Passionate about introducing music tech to the public as a Popular Science Writer
- Skilled in Python, SQL, Docker, Kubernetes, Cloud Engineering (AWS), and other DevOps
- Good communication and presentation skills in English and Chinese

Working Experience

Sep. 2023 – now

Senior Backend and Cloud Engineer
[Nomono AS](https://nomono.co), Norway
Building a robust, scalable and high-performing cloud service that provides great audio processing and editing for content creators.

May 2021 – Aug. 2023

Head of R&D
Music Tech Startups including [SPARWK AS](https://sparwk.com) and [Deus Vault UK Ltd.](https://deusvault.com)
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).

Sept. 2019 – April 2021

Senior Research Engineer
[Tencent Music Entertainment (TME)](https://www.tencentmusic.com), 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](https://c4dm.eecs.qmul.ac.uk))
Supervisors: Mark Sandler, George Fazekas, Andrew McPherson
Thesis: [Modelling Instrumental Gestures and Techniques - A Case Study of Piano Pedalling](https://beiciliang.github.io)

2018

Summer Workshop Student
Deep Learning for Music Information Retrieval I & II
Centre for Computer Research in Music and Acoustics ([CCRMA](https://ccrma.stanford.edu))
Stanford University, USA

2010 – 2014

BEng in Integrated Circuit Design and Integrated System
School of Electronic Information Engineering
Tianjin University ([TJU](https://www.tju.edu.cn)), 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.

2023 – now　**aws-bootcamp-cruddur-2023**
Implementations for a micro-blogging platform using React, Flask and AWS (demo).

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.

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](https://doi.org/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](https://doi.org/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](https://doi.org/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)*.