Dr. Beici Liang

Last updated: June, 2022

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7014 Trondheim
Norway

Working Experience

Nov. 2021 – present
Research Engineer
Develop models and databases for music information retrieval (MIR) services
SPARWK AS, Norway

May 2021 – Oct. 2021
Technical Lead
Develop APIs for content-based music identification services
Deus Vault UK Ltd., United Kingdom

Sept. 2019 – April 2021
Senior Research Engineer
Develop audio embeddings for music recommendation systems
Tencent Music Entertainment (TME), China

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.

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.

Funding

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.

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 Science

Open-source Projects

2018 – present **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.

Datasets

2019 Dataset for Evaluating Sustain-Pedal Detection from Polyphonic Piano Music. doi:10.5281/zenodo.3243529

2018 Dataset for Evaluating Pedalling Techniques Recognition Using Gesture Data. doi:10.5281/zenodo.3237929

2017 Dataset for Analysing Effects of Piano Pedalling Techniques. doi:10.5281/zenodo.3242149

Academic Service

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

Internship Supervision at TME

2021 Zeyu Yang, Master Student at Technische Universität Berlin

2020 Ke Chen, PhD Student at University of California San Diego

Publications

PhD Thesis

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

Journal Articles

2018 **B. Liang**, 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, **B. Liang**, 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, **B. Liang**, 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, **B. Liang**, 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 **B. Liang**, 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 **B. Liang**, 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 **B. Liang**, 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 **B. Liang**, G. Fazekas, and M. Sandler. "Detection of Piano Pedalling Techniques on the Sustain Pedal". In: *143rd Audio Engineering Society Convention*.

2017 **B. Liang**, 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 **B. Liang**, 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 **B. Liang**, 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 **B. Liang**, 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 **B. Liang**, 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 **B. Liang**, 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)*.

Pending Patents

2021 Z. Yang, and **B. Liang**. "Song Segmentation Method and Device and Storage Medium". CN202110688029.

2021 **B. Liang**. "Method for Obtaining Audio Representation Extraction Model and Audio Recommendation Method". CN202110298544.

2021 **B. Liang**, Q. Chen, and Z. Cai. "Audio Recommendation Method and Device, Computer Equipment and Storage Medium". CN202110298543.

Miscellaneous

Memberships

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

- Audio Engineering Society

Volunteers

- Women in Music Information Retrieval Workshop 2021
- Member of the Local Organising Committee for the 12th International Audio Mostly Conference
- Deputy Head of Peiyang Chorus 2011-2012
- Interpreter at Tianjin Grand Theatre 2012

Languages

Chinese	Native proficiency
English	Full professional proficiency
Norwegian	Elementary proficiency