Beici Liang

PhD · Amateur Pianist · Music Technologist

beici.liang@foxmail.com beiciliang.github.io beiciliang beiciliang

Experience

Senior Research Engineer (T9)

Shenzhen, China

QQ Music BU, Tencent Music Entertainment

Sept. 2019 - April 2021

- Implement music information retrieval algorithms for different services
- Develop audio embeddings to solve cold-start problems in music recommendation
- Deploy end-to-end systems for music auto-tagging, structral segmentation, etc.
- Publish papers and patents on music AI (related papers in [1-5])

Popular Science Writer

Online

Freelancer

July 2018 - Present

- Introducing music technology at WeChat Official Account "intro2musictech" and Zhihu Website (in Chinese)

Education

Queen Mary University of London

London, UK

Doctor of Philosophy

Sept. 2014 - Nov. 2019

- Thesis: Modelling Instrumental Gestures and Techniques - A Case Study of Piano Pedalling
- Programme: Media and Arts Technology Centre for Doctoral Training (MAT CDT)
- Research Group: Centre for Digital Music (C4DM)
- Team Member of "*Fusing Audio and Semantic Technologies for Intelligent Music Production and Consumption*" (FAST-IMPACt) Project
- Research is supported by China Scholarship Council (CSC), EPSRC & AHRC Grant EP/L01632X/1, EPSRC Grant EP/L019981/1 and AudioCommons (688382).

Tianjin University

Tianjin, China

Bachelor of Engineering

Sept. 2010 - July 2014

- Major in Integrated Circuit Design and Integrated System
- Grade: 88/100

Skill

Interests Music Information Retrieval, Audio Signal Processing, Machine Learning and Deep Learning

Programming Python, Matlab, Bash, Spark, MySQL

Tools Git, LaTeX, Adobe Illustrator, Adobe InDesign, Logic Pro, Final Cut Pro, Laser Cutting

Languages Chinese, English, Greek

Award

2020-25	**Overseas High-Caliber Personnel**, awarded by Shenzhen Municipal Government	*Shenzhen, China*
2014-18	**Chinese Government Scholarship**, awarded by China Scholarship Council	*China*
Jul. 2018	**Full Tuition Scholarship**, CCRMA Summer Workshops	*Stanford, USA*
Oct. 2017	**WiMIR Award**, 18th International Society for Music Information Retrieval Conference	*Suzhou, China*
Aug. 2017	**Best Poster**, 12th International Audio Mostly Conference	*London, UK*
Jul. 2014	**Excellent Graduate**, Tianjin University	*Tianjin, China*

Academic Experience

2017-now	**Reviewer/Sub-Reviewer**, ISMIR, DAFx, CSMT, IEEE Transactions on Affective Computing	*Worldwide*
2015-18	**Teaching Assistant**, Research Methods, The Semantic Web, Interactive Digital Media Techniques, Digital Signal Processing	*QMUL, UK*
Jul. 2018	**Summer Workshop Student**, Deep Learning for Music Information Retrieval I & II at Center for Computer Research in Music and Acoustics (CCRMA)	*Stanford, USA*
2012-14	**Piano Lecturer**, Keyboard Training Centre of Tianjin University	*Tianjin, China*

Research Experience

Detection of Piano Pedalling Techniques

related papers in [4-6, 8-9]

Study in Audio Domain

- Built a dataset of MIDI-annotated piano recordings with different pedalling techniques.
- Analysed effects of pedalling on piano sound.
- Developed algorithms for pedalling techniques detection.

Piano Pedaller

related papers in [7, 10-11]

Study in Sensor Domain

- Designed a dedicated system for sensing the pedal movement and recognising the employed techniques.
- Applied a score-following system for visualization.
- Provided ground truth dataset for audio-based pedalling detection.

The Organ Web App

related papers in [14]

MAT advanced placement project

- Student internship of the Organ Project at the Union Chapel, London, UK. (Apr. - Sep. 2015)
- Developed a web app to present different aspects of the Henry Willis pipe organ.

Publication

[1] Shichao Hu, **Beici Liang**, Zhouxuan Chen, Xiao Lu, Ethan Zhao, Simon Lui. "Large-scale Singer Recognition using Deep Metric Learning", in *Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN)*, 2021.

[2] Ke Chen, **Beici Liang**, Xiaoshuan Ma, Minwei Gu. "Learning Audio Embeddings with User Listening Data for Content-based Music Recommendation", in *Proceedings of the IEEE International Conference on Audio, Speech and Signal Processing (ICASSP)*, Toronto, Canada, 2021.

[3] Shichao Hu, Bin Zhang, **Beici Liang**, Ethan Zhao, Simon Lui. "Phase-aware Music Super-Resolution Using Generative Adversarial Networks", in *Proceedings of INTERSPEECH*, 2020.

[4] **Beici Liang**, Zonghan Cai, Quan Chen, Yifan Li, Minwei 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.

[5] **Beici Liang**, Minwei Gu. "Music Genre Classification Using Transfer Learning", demo paper for *Workshop on Artificial Intelligence for Art Creation at the IEEE International Conference on Multimedia Information Processing and Retrieval (MIPR)*, 2020.

[6] **Beici Liang**, György Fazekas, Mark Sandler. "Transfer Learning for Piano Sustain-Pedal Detection", in *Proceedings of IJCNN*, Budapest, Hungary, 2019.

[7] **Beici Liang**, György Fazekas, Mark Sandler. "Piano Sustain-Pedal Detection Using Convolutional Neural Networks", in *Proceedings of ICASSP*, Brighton, UK, 2019.

[8] **Beici Liang**, György Fazekas, Mark Sandler. "Piano Legato-Pedal Onset Detection based on a Sympathetic Resonance Measure", in *Proceedings of the 26th European Signal Processing Conference (EUSIPCO)*, Rome, Italy, 2018.

[9] **Beici Liang**, György Fazekas, Mark Sandler. "Measurement, Recognition and Visualisation of Piano Pedalling Gestures and Techniques", *Journal of the Audio Engineering Society*, vol.66 no.6 pp. 448-456, 2018.

[10] **Beici Liang**, György Fazekas, Mark Sandler. "Towards the Detection of Piano Pedalling Techniques from Audio Signal", extended abstracts for the *Late-Breaking Demo Session of the 18th International Society for Music Information Retrieval Conference (ISMIR)*, Suzhou, China, 2017.

[11] **Beici Liang**, György Fazekas, Mark Sandler. "Detection of Piano Pedalling Techniques on the Sustain Pedal", in *Proceedings of the 143rd Convention of Audio Engineering Society*, New York, USA, 2017.

[12] **Beici Liang**, György Fazekas, Mark Sandler. "Recognition of Piano Pedalling Techniques Using Gesture Data", in *Proceedings of the 12th International Audio Mostly Conference*, London, UK, 2017.

[13] **Beici Liang**, György Fazekas, Andrew McPherson and Mark Sandler. "Piano Pedaller: A Measurement System for Classification and Visualisation of Piano Pedalling Techniques", in *Proceedings of the International Conference on New Interfaces for Musical Expression (NIME)*, Copenhagen, Denmark, 2017.

[14] **Beici Liang**. "Introduction of Centre for Digital Music", *Entertainment Technology*, vol.5 pp.57-58, 2016. (in Chinese)

[15] **Beici Liang**. "Introduction of Augmented Instruments", *Entertainment Technology*, vol.4 pp.44-46, 2016. (in Chinese)

[16] **Beici Liang**, György Fazekas, Mark Sandler. "The Organ Web App", extended abstracts for the *Late-Breaking Demo Session of the 16th International Society for Music Information Retrieval Conference (ISMIR)*, Malaga, Spain, 2015.

Media Coverage

Apr. 2018 **Invited Speaker**, Seminar Series by China Conference on Sound and Music Technology — *Seminar*

Dec. 2017 **11 Doctoral Students with "Sexy Brains"** , Annual Special Issue of CITYZINE Magazine — *Interview*