Beici Liang

PhD · Amateur Pianist · Music Technologist

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Experience

Technical Lead

Europe

Deus Vault UK Ltd. *May 2021 - Present*

- Develop and deploy services for content-based music retrieval
- Responsible for collaborations with academia

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

Award

2020-25	**Overseas High-Caliber Personnel**, awarded by Shenzhen Municipal Government	*Shenzhen, China*
Jan. 2021	**Annual Technology Breakthrough**, awarded by Tencent Music Entertainment	*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*

Research Experience

Detection of Piano Pedalling Techniques

related papers in [6-8, 10-11]

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*

STUDY IN SENSOR DOMAIN *[9, 12-13]*

- 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*

MAT ADVANCED PLACEMENT PROJECT *[16]*

- 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.

Academic Experience

2017-now	**Reviewer/Sub-Reviewer**, ISMIR, DAFx, CSMT, IEEE Transactions on Affective Computing	*Online*
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*

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*