

Beici Liang

PHD · AMATEUR PIANIST · MUSIC TECHNOLOGIST

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Now

Research Scientist (T9)

QQ MUSIC BU, TENCENT MUSIC ENTERTAINMENT

Shenzhen, China

Sept. 2019 - Present

- Implement music information retrieval algorithms for different services
- Develop audio embeddings to solve cold-start problems in music recommendation
- Deploy end-to-end auto-tagging system for music genre classification, music/speech detection, etc.
- Publish research on music AI at industrial level (related papers in [1-3])

Popular Science Writer

FREELANCER

Online

July 2018 - Present

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

Education

Queen Mary University of London

DOCTOR OF PHILOSOPHY

London, UK

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

BACHELOR OF ENGINEERING

Tianjin, China

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, L^AT_EX, 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

2017-18 **Reviewer/Sub-Reviewer**, ISMIR, DAFx, CSMT, IEEE Transactions on Affective Computing

QMUL, UK

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

STUDY IN AUDIO DOMAIN

[4-6, 8-9]

- 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

[7, 10-11]

- 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

[14]

- 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, Bin Zhang, **Beici Liang**, Ethan Zhao, Simon Lui. "Phase-aware Music Super-Resolution Using Generative Adversarial Networks", in *INTERSPEECH*, 2020 (accepted).
- [2] **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.
- [3] **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.
- [4] **Beici Liang**, György Fazekas, Mark Sandler. "Transfer Learning for Piano Sustain-Pedal Detection", in *Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN)*, Budapest, Hungary, 2019.
- [5] **Beici Liang**, György Fazekas, Mark Sandler. "Piano Sustain-Pedal Detection Using Convolutional Neural Networks", in *Proceedings of the IEEE International Conference on Audio, Speech and Signal Processing (ICASSP)*, Brighton, UK, 2019.
- [6] **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.
- [7] **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.
- [8] **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.
- [9] **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.
- [10] **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.
- [11] **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.
- [12] **Beici Liang**. "Introduction of Centre for Digital Music", *Entertainment Technology*, vol.5 pp.57-58, 2016. (in Chinese)
- [13] **Beici Liang**. "Introduction of Augmented Instruments", *Entertainment Technology*, vol.4 pp.44-46, 2016. (in Chinese)
- [14] **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