

Beici Liang

PHD · AMATEUR PIANIST & ALTO

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Now

Research Scientist (T9)

QQ MUSIC BU, TENCENT MUSIC ENTERTAINMENT

- 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])

Shenzhen, China

Sept. 2019 - Present

Popular Science Writer

FREELANCER

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

Online

July 2018 - Present

Education

Queen Mary University of London

DOCTOR OF PHILOSOPHY

- 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).

London, UK

Sept. 2014 - Nov. 2019

Tianjin University

BACHELOR OF ENGINEERING

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

Tianjin, China

Sept. 2010 - July 2014

Skill

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

Programming Python, Matlab, Bash, Spark, MySQL

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

Languages Chinese, English, Greek

Award

2014-18 **Chinese Government Scholarship**, awarded by China Scholarship Council

Jul. 2018 **Full Tuition Scholarship**, CCRMA Summer Workshops

Oct. 2017 **WiMIR Award**, 18th International Society for Music Information Retrieval Conference

Aug. 2017 **Best Poster**, 12th International Audio Mostly Conference

Jul. 2014 **Excellent Graduate**, Tianjin University

China

Stanford, USA

Suzhou, China

London, UK

Tianjin, China

Academic Experience

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

2015-18 **Teaching Assistant**, Research Methods, The Semantic Web, Interactive Digital Media Techniques, Digital Signal Processing

Jul. 2018 **Summer Workshop Student**, Deep Learning for Music Information Retrieval I & II at Center for Computer Research in Music and Acoustics (CCRMA)

2012-14 **Piano Lecturer**, Keyboard Training Centre of Tianjin University

QMUL, UK

QMUL, UK

Stanford, USA

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