

Zehao Wang

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Education

- **UC San Diego** **California, U.S.A.**
PhD student *2021 - Present*
Computer Music, Department of Music
- **Peking University** **Beijing, China**
Undergraduate *2017 - 2021*
Major in Data Science (Math), School of Mathematical Sciences, advised by Prof. Zhanxing Zhu
- **China Conservatory of Music** **Beijing, China**
Private Course
Music Composition
Advisor: Prof. Fei Wang

Experience (Detailed information can be found in my [website](#).)

Academic

- **New York University Shanghai** **Shanghai, China**
Music X Lab *May 2020 - Jul 2021*
Host: Prof. Gus G. Xia
 - Disentanglement representation learning for controllable chord progression generation based on VAE.
- **School of Psychological and Cognitive Sciences, Peking University** **Beijing, China**
Bao Lab *Mar 2020 - Jul 2021*
Advisor: Prof. Yan Bao
 - Bayesian model of internal reference in temporal perception.
- **Queen Mary University of London & Central Conservatory of Music** **Beijing, China**
Innovative Instrument Design - Du Xian Qin International Workshop *Sep 2019*
Host: Prof. Nick Bryan-Kinns & Prof. Zijin Li
 - Improving and augmenting the traditional Duxianqin, designing some new functions for it, mainly about the joystick.
 - Chinese website construction and English-Chinese translation.
- **CCRMA, Stanford University** **Palo Alto, CA, U.S.**
Neural Networks for Music Workshop *Aug 2019*
Host: Prof. Wendy Ju & David Goedicke
 - Using ResNet for real-time audio classification.
 - Collecting and recording the Stanford sound dataset.
- **School of Mathematical Sciences, Peking University** **Beijing, China**
Deep Learning Lab *May 2019 - Sep 2020*
Advisor: Prof. Zhanxing Zhu
 - Working on algorithms and theoretical analysis for robustness and interpretability of deep neural network.
 - Theoretical analysis on frequency domain of gradient-based adversarial examples of neural network.
- **Wangxuan Institute of Computer Technology, Peking University** **Beijing, China**
Digital Audio Lab *Apr 2018 - Dec 2019*
Advisor: Prof. Xiaou Chen
 - Improving a two-stage automatic pitch correction framework of singing voice using WSOLA algorithm and PyWorld.
 - Releasing a dataset and designing a FCN based algorithm for musical instrument playing technique detection.
 - Proposing some melody features for designing a melody co-creation system based on Transformer.

Industry (both technology and music).....

- ByteDance Beijing, China
Research Intern in AI Lab Nov 2020 - Mar 2021
- ByteDance Beijing & Shanghai, China
Research Intern in AI Lab, Mentor: Dr. Bilei Zhu Dec 2019 - Sep 2020
- Microsoft Beijing, China
Research Intern in Speech Group, Mentor: Dr. Lei He and Xi Wang Jun 2019 - Dec 2019

Teaching and Other Music Experience.....

- Academy of Opera, Peking University Beijing, China
Adjunct Piano Accompanist Apr 2019 - Jul 2021
 - Working for rehearsal and concert, including art songs, chorus and opera.
- Teaching
 - Teaching assistant:
 - MUS174A, Audio MIDI Techniques, 2021 Fall, UC San Diego
 - Economics and Computation, 2019 Summer, Peking University
 - Lecturer:
 - American Mathematics Competitions (in English), 2020 Summer, Online
 - Mathematical Olympiad, 2017 Summer, Zhengzhou No.1 High School
- Other music experience
 - Independent music producer (on Xiami Music & Netease Music)
 - Orchestra and choir arranger
 - Piano accompanist, chamber music conductor

Publications

(* denotes equal contribution)

Regular Papers (including submissions and preprints).....

- Zehao Wang***, Bochen Lyu*, Pu Yang*, Zhanxing Zhu. **A frequency domain analysis of gradient-based adversarial examples**, *submitted to ICML 2021*, 2021.
- Zehao Wang**, Zhesong Yu, Xiaoou Chen, Bilei Zhu, Yuan Wan, Zejun Ma. **Compose with Me: Co-Creating Melody with Transformer and Selecting by Phrase-Level Melody Features**, *preprint*, 2020.
- Zehao Wang***, Jingru Li*, Xiaoou Chen, Zijin Li, Shicheng Zhang, Baoqiang Han, Deshun Yang. **Musical Instrument Playing Technique Detection Based on FCN: Using Chinese Musical Instruments as Examples**, *to submit to a journal, arXiv preprint(previous version): 1910.09021*, 2020.
(Short Version appears at *ECML PKDD 2020 - 13th International Workshop on Machine Learning and Music* as a **Contributed Talk**.)

Workshop Papers.....

- Zehao Wang***, Jingru Li*, Xiaoou Chen, Zijin Li, Shicheng Zhang, Baoqiang Han, Deshun Yang. **Deep Learning vs. Traditional MIR: a Case Study on Musical Instrument Playing Technique Detection**, *ECML PKDD 2020 - 13th International Workshop on Machine Learning and Music*, 2020.

Skills

- Programming:** Python>=Matlab>C++=Java=HTML=Julia
- Framework:** Pytorch & TensorFlow (Deep Learning); React.js (Front-end); JUCE, Csound, Supercollider, Puredata and Faust (Music Related)
- Language:** Chinese(Native), English(Fluent)

Honors and Awards

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| The First Prize of Contemporary Undergraduate Mathematical Contest in Modeling | Sep 2018 |
| The Silver Medal of 32nd Chinese Mathematical Olympiad | Dec 2016 |
| The Second Place of 32nd National Mathematics League in Henan Division | Sep 2016 |

The **Third Place** of 13th Chinese Southeast Mathematical Olympiad
The **First Place** of Pearl River - Kayserburg International Youth Piano Competition
The **Second Prize** of Musical Ensemble Track in Art Festival of Henan Province

Aug 2016
Aug 2015
Jul 2015