

Hangyu Li

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EDUCATION BACKGROUND

Beihang University

09/2016 – Expected 06/2020

School of Computer Science and Engineering & Shenyuan Honor College

- Overall GPA: **3.81/4** (Major: **3.82**) ; Rank: **11/304**
- Research Interests: ***Machine Learning and its Application in Music Technology***
- Programming: Proficient in C/C++, MATLAB, Python, Java, Unix
- DL Toolkits: Tensorflow, Pytorch
- Core Courses: Mathematical Analysis I 95, Advanced Algebra II 96, Advanced Programming 99, Computer Organization 93, Operating System 93, Compiler Technology 94, Algorithm Design 90, Deep Learning 96
- Auditing Courses: Audio Signal Processing in Music Application, Signals and Systems
- Awards and Honors: First Class Excellent Academic Performance Scholarship (three times);
2nd prize of National Mathematical Competition;
2nd prize of National English Competition for College Students;
Samsung Scholarship for Excellent High-School Students (top 10)

RESEARCH EXPERIENCES

Hierarchical Jazz Lead Sheets Generation

06/2019 – 10/2019

Supervised by Prof. Zhiyao Duan, University of Rochester

- Organized a dataset consisting of 790 pieces of jazz lead sheets with section, chord, and note labels.
- Designed an algorithm in 3-level top-down (section-chord-note) tree encoder-decoder architecture.
- Proposed local-section-attention mechanism which allows the GRUs in one genre of section (e.g. A') explicitly attend to already generated sections (e.g. A) to model recurring structure.

Singing Voice Separation

04/2019 – 06/2019

Supervised by Prof. Xiaoou Chen and Prof. Deshun Yang, Peking University

- The first to apply Resnet structure but without decreasing the size of feature maps when increasing the network's depth, so that the information restored in the spectrogram will not lose when data flows through the network.
- Integrated Squeeze-and-Excitation blocks and Wavenet's skip-connection structure to enhance feature extraction.
- Accepted in 2020 Multimedia Modeling (MMM) conference.

Singing Voice Alignment in Karaoke System

10/2018 – 04/2019

Supervised by Prof. Xiaoou Chen and Prof. Deshun Yang, Peking University

- Designed a two-step algorithm focusing on the alignment between the professional singers' tracks and amateur tracks in MATLAB.
- Extracted the acoustic parameters such as F0 frequency, low-frequency cepstrum, linear predicted coefficient, Straight Spectrum and F2-F3 formants and gather them together to find the optimal coefficients using de-DTW algorithm.

SELECTED COURSE PROJECTS

Physical Adversarial Attack

04/2019 – 06/2019

Deep Learning (course collaborated with Face++), Supervised by Prof. Jian Sun and Prof. Jingyuan Wang

- Generated a patch to fool the mainstreaming object detection algorithms in real-time video surveillance.
- Designed an attacking algorithm based on gradient descent methods and considered model transferability, robustness, and generalization.
- Completed a formal paper in the format of CVPR.

A Compiler for Simplified-C Language

11/2018 – 01/2019

Compiling Technology, Supervised by Prof. Li Zhang

- Designed and implemented a compiler written in C++ with **7000+** lines consisting of lexical analysis, syntax analysis, semantic analysis, symbol table management, target code generation, and optimization techniques.
- Grasped the core idea for compiling and the method for software developing.

EXTRACURRICULAR ACTIVITIES

- A starter in basketball team for Shenyuan Honors College 10/2016 – Present
- Bass in Starry – an a cappella choir league 03/2017 – Present
- Consulting Assistant in 2017&2018 International Graduate Scholarship Fair 10/2017, 10/2018