

JUNHAO WANG

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EDUCATION

Master of Arts, Music Technology

September 2020 - Present

McGill University, Montreal, QC, Canada

- Distributed Digital Music Archives & Libraries Lab (DDMAL), Advisor: Prof. Ichiro Fujinaga
- GPA: 4.0 / 4.0
- Thesis topic: Automatic classification of playing techniques in Guitar Pro songs

Bachelor of Engineering, Digital Media Technology

September 2016 - July 2020

Communication University of China, Beijing, China

- Key Laboratory of Media Audio and Video, Ministry of Education
- GPA: 3.46 / 4.0
- Outstanding undergraduate research on MIDI-based music generation

PROJECT HIGHLIGHTS

Guitar Expression Technique Detection in Guitar Pro Songs

- Identify expression techniques (bend, vibrato, slide, hammer-on, and pull-off) from guitar solo recordings
- Automatically generate annotations from Guitar Pro files
- Train and evaluate expression technique classifiers

Guitar Plucking Technique Classifier

- Spectral and timbral feature extraction from guitar audio recordings
- String number and plucking technique detection using SVM classifier

HPCP Key Finder

- Spectral analysis for extracting Harmonic Pitch Class Profiles (HPCP) from polyphonic audio signals
- Key estimation based on correlation with key profile templates

Impulsive Noise Remover

- Audio restoration for gramophone recordings
- Impulsive noise (clicks) detection and removal based on autoregressive modelling

Electric Guitar Synth

- Plucked string sound synthesis using extended Karplus-Strong algorithm
- Audio effects (glissandi, tone control, distortion, feedback) emulation

EXPERIENCE

Research Assistant

September 2020 - Present

Distributed Digital Music Archives & Libraries Lab (DDMAL)

Montreal, QC, Canada

- Django web development for Cantus Database (symbolic music database website)

Audio Research Intern

May 2021 - September 2021

Ubenwa Intelligence Solutions

Montreal, QC, Canada

- Develop signal processing routines for analyzing infant cry sounds
- Detect five pathological acoustic patterns in specialized infant cry audio dataset

Local Coordinator

The 21st International Society for Music Information Retrieval (ISMIR) Conference

October 2020
Montreal, QC, Canada

- Host conference events, support virtual conference platforms, and coordinate volunteers and organizers

Research Assistant

Key Laboratory of Media Audio and Video, Ministry of Education

May 2019 - July 2020
Beijing, China

- Develop algorithms for symbolic music generation and style translation

Student Participant

University of British Columbia

July 2019 - August 2019
Vancouver, BC, Canada

- Intensive summer program on computer music, covering acoustics, signal processing, and audio programming
- Final grades: 95 / 100 (A+)

RESEARCH INTEREST

I'm interested in **Audio Signal Processing & Machine Learning** tasks in general. At the moment, I'm actively working on the following topics:

- Instrument playing technique detection
- Note tracking and automatic transcription

SKILLS

Programming Language and Software: Python, Matlab, Git, Docker

Machine Learning: Scikit-learn, PyTorch

Web Development: Django, HTML, CSS, JavaScript

Instrument: Guitar player for 7 years, band member for 3 years

Language: English-native, Chinese Mandarin-native

HONORS

- Graduate Internship Award *McGill University, 2021*
- Outstanding Undergraduate Research *Communication University of China, 2020*
- Academic Excellence Scholarships *Communication University of China, 2017-2019*