

YUSONG WU (吴雨松)

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EDUCATION

Beijing University of Posts and Telecommunications	Beijing, China
BE in Automation	09/2016 - 06/2020
University of Montréal & Quebec Artificial Intelligence Institute (MILA)	Montréal, Canada
MSc in Computer Science – Artificial Intelligence	09/2020 - 08/2022 (expected)
Advisor: Prof. Aaron Courville , Prof. Chengzhi Anna Huang	
GPA: 4.0/4.0	

PUBLICATIONS & MANUSCRIPTS

- **Yusong Wu**, Ethan Manilow, Yi Deng, Rigel Swavely, Kyle Kastner, Tim Cooijmans, Aaron Courville, Cheng-Zhi Anna Huang, Jesse Engel: *MIDI-DDSP: detailed control of musical performance via hierarchical modeling*. Submitted to ICLR 2022, [under review with an average score of 8](#). Accepted by 1st [CtrlGen Workshop](#) at NeurIPS 2021
- **Yusong Wu**, Kun Chen, Ziyue Wang, Xuan Zhang, Fudong Nian, Xi Shao, Shengchen Li: *Audio Captioning Based on Transformer and Pre-Training for 2020 DCASE Audio Captioning Challenge*. Technical Report, DCASE2020 Challenge
- **Yusong Wu**, Shengchen Li, Chenzhu Yu, Heng Lu, Chao Weng, Dong Yu: *Peking Opera Synthesis via Duration Informed Attention Network*. INTERSPEECH 2020
- Liqiang Zhang, Chenzhu Yu, Heng Lu, Chao Weng, **Yusong Wu**, Xiang Xie, Zijin Li, Dong Yu: *DurIAN-SC: Duration Informed Attention Network based Singing Voice Conversion System*. INTERSPEECH 2020
- **Yusong Wu**, Shengchen Li: *Guqin Dataset: A symbolic music dataset of Chinese Guqin collection*. Proceedings of China Conference on Sound and Music Technology (CSMT 2019)
- **Yusong Wu**, Shengchen Li: *Distinguishing Chinese Guqin and Western Baroque pieces based on statistical model analysis of melodies*. International Symposium on Computer Music Multidisciplinary Research (CMMR 2019)

SELECTED RESEARCH EXPERIENCE

Hierarchical Music Generation with Detailed Control	09/2020 – now
Collaborate with advisors and members of Google Magenta teams	
• Propose MIDI-DDSP , a hierarchical music generation model with explicit and interpretable representation for controlling musical performance and synthesis.	
• MIDI-DDSP can reconstruct high-fidelity audio, accurately predict performance attributes for a note sequence, independently manipulate the attributes of a given performance, and as a complete system, generate realistic audio from a novel note sequence.	
2nd Place in DCASE 2020 Challenge Task 6: Automatic Audio Captioning	03/2020 - 07/2020
IEEE AASP Challenge on Detection and Classification of Acoustic Scenes and Events	
• Proposed a sequence-to-sequence model with a CNN as encoder and a Transformer as decoder, with data augmentation, data regulation, pre-training, and fine-tuning for accurate automatic audio captioning.	
• The proposed system ranked 2 nd in all participants (1 st as an academic team).	
• The proposed system won the Reproducible System Award.	
Singing Synthesis System	08/2019 – 05/2020
Research Intern, Tencent AI Lab.	
• Adapted from DurIAN system to build a singing synthesis system which generates Mel-spectrogram from musical score input and generates audio using WaveRNN.	
• Expressive Singing Performance : Experimented synthesizing Peking Opera singing with expressiveness in singing by inputting musical note, with the dynamics in Peking opera singing learned from the spectrogram.	
• Learning Singing from Speech : Experimented generating singing with the voice timbre learned from speech by jointly training singing and fine-tuning speech synthesis using fundamental frequency input.	

MUSIC EXPERIENCE

- Over 10 years of percussion experience in orchestra, wind symphony, and marching band. Proficient in Timpani. Started playing percussion at age 6.
- Played with famous Chinese pop singer Jie Zhang in 2016 on the [show](#) “Singer”.

SELECTED AWARD

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| • DIRO x Quebec Ministry of Higher Education international students scholarship, CAD \$4000 | 2022 |
| • Outstanding Paper – 1st CtrlGen Workshop at NeurIPS 2021 | 2021 |
| • Reproducible System Award – DCASE Challenge | 2020 |
| • 2nd Place overall (1st as an academic team) on automated audio captioning, IEEE AASP Challenge on Detection and Classification of Acoustic Scenes and Events (DCASE) | 2020 |
| • Student Grant of INTERSPEECH – Early student registration + 1-year ISCA membership | 2020 |
| • The Québec Bursary Granting Exemption from Differential Tuition Fees | 2020 |
| • 2nd Prize of Academic Scholarship (Top 15%) | 2019 |
| • Gold Price in Beijing University Orchestra Performance | 2018 |