YUTIAN QIN

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EDUCATION

College of Engineering, Carnegie Mellon University (Pittsburg, PA) *Aug 2022 – Present*
M.S. in Biomedical Engineering - Research

Tandon School of Engineering, New York University (New York City, NY) *Sep 2020 – May 2022*
B.S. in Electrical Engineering

- Core courses: Digital Signal Processing I (A-), Real-Time Digital Signal Processing (A-), Medical Imaging (B), Intro to Machine Learning (A), Electromagnetic Waves (A), Feedback Control (A), Intro to Embedded System Design (A)

School of Rail Transportation, Soochow University (Suzhou, CHN) *Sep 2018 – Jun 2020*
Major in Electrical Engineering and Intelligent Control

Summer Session, University of California, Berkeley (Berkeley, CA) *Jul 2019 - Aug 2019*

PUBLICATION

- Y. Qu, **Y. Qin (Co-First)**, L. Chao, H. Qian, Z. Wang, and G. Xia, "Modeling Perceptual Loudness of Piano Tone: Theory and Applications," *Proceedings of the 23rd International Society for Music Information Retrieval Conference (ISMIR)*, 2022, accepted.

RESEARCHES & INTERNSHIPS

Perceptual Loudness Modelling of Complex Tones for Performance Transfer on Player Piano
Undergrad Researcher | Prof. Gus Xia | Music X Lab, NYU Shanghai *Jun 2021 - Present*

- Design and conduct experiments on Equal Loudness Curve of piano tones on pitch-velocity space and study possible perceptive bias in terms of hearing order, pitch intervals, and harmonics overlapping.
- Optimizing piano performance transfer algorithms in terms of duration and velocity to improve transfer quality between player pianos with weighting filters and gains on frequency domain.

Pitching Shifting Using Tunable Q-Factor Wavelet Transform
Undergraduate Thesis | Prof. Ivan Selesnick | Tandon School of Engineering, NYU *Dec 2022 – June 2022*

- Utilize tunable Q-factor wavelet transform (TQWT) to sound waves and realize pitch shifting by changes on sub-bands of TQWT and zer0-padding in frequency domain. Optimize TWQT algorithms by basis pursuit using split augmented Lagrangian shrinkage algorithm (SALSA) and overlapping group shrinkage (OGS).

Music Biocomputing on *Physarum Polycephalum*
Undergrad Researcher | Prof. Gus Xia | Music X Lab, NYU Shanghai *Feb 2021 – May 2022*

- Cultivated *Physarum Polycephalum* (a.k.a. Slime Molds) as computational models to process music and understand o understand learning model. Designed and conducted experiments to train conditioned reflex using stimuli.
- Proposing algorithms to detect slime molds coverage from video data and analyze its growing speed and life cycle.

Electrification of a traditional Chinese musical instrument *Liu-qin*
Group Leader | Dean's Undergraduate Research Funding, College of Art and Science, NYU *Apr 2021 – Dec 2021*

- Set up timbre model of *Liu-qin* using dynamic spectral envelope modeling and Jensen's sinusoidal timbre model on frequency domain to describe timber in Python. Fabricated pickups for *Liu-qin* and a circuit that amplifies the signal.
- Synthesizing *Liu-qin* sounds based on the timbre model and transfer timbre into other timbres such as the piano's.

High Efficiency and High Performance of Rail Transit Auxiliary Converter Based on Wide Band-Gap Devices
UROP | Prof. Mingdi Fan | Advanced Energy and Electrified Transportation Research Center, SCU *Sep 2019- Jun 2020*

- Established current converter and voltage converter to build an FPGA-based system to transfer high voltage into serviceable voltage for loads in the railway transportation system.

Project Department of Intelligent Distribution Center in Bosideng International Holdings Limited
Intern *Aug 2019-Sep 2019*

- Set up intelligent logistics conveyor with PLC and supervised human-machine mixture flow system based on Geek robot.

HONORS

- New York University Honors Scholar *Apr 2022*
- The Dean's List of Tandon School of Engineering, NYU *2020-2022*
- Dean's Undergraduate Research Funding, NYU *Apr 2021*
- First-class Scholarship for Excellence in Soochow University (Top 4%) *2018-2019*