HAN ZHANG

1-(224)-716-1125 ⋄ HanZhang2020@u.northwestern.edu
website: zhanghanpqqo.github.io/HanZhang/

EDUCATION

McCormick School of Engineering, Northwestern University, USA *Aug.2019-Present*

- M.S. in Electrical Engineering; **Overall GPA: 3.97/4.0;**
- **Courses:** Discrete-time Signal Processing, Digital Filtering, Machine Learning, Random Processes, Human perception and Electronic Media, Human Computer Interaction.

School of Information Science and Technology, Tsinghua University, China *Aug.2015-Jul.2019*

- B.S. in Automation;

Art Center, Tsinghua University, China *Aug.2017-Jul.2019*

- Minor in Music Technology and Engineering;

RESEARCH EXPERIENCE

Electrical and Computer Engineering Department, Northwestern University *May2020-Present*
Project: Timbre Analysis and Synthesis *Team Leader*
Advisor: Thrasyvoulos (Thrasos) N. Pappas, Professor

- Obtained a set of features that are adequate for timbre description and sound synthesis by time-variant spectrum analysis. Developed an approach of sound synthesis based on the features. Determined principle controlling parameters by learning algorithms.
- Currently mapping the semantic descriptions on timbre and timbre spaces to the scales of these features. An overall characteristics of musical instruments can also be expected by looking deeply into the consistency and variation within and between the instruments. The features can also provide with a new approach of generating timbral sound and music by shaping the time-variant spectrum based on additive model.

Department of Automation, Tsinghua University *Feb.2018-Jul.2018*
Project: Musical Audio Processing System *Research Assistant*
Advisor: Jianming Hu, Associate Professor

- Designed and implemented a system for musical audio processing, based on C++. The system allows audio processes, musical mixing operations, sound visualization and file operations. It is also designed to be scalable and available for plugins. Finished a user-friendly interface corresponded with users' conceptual model.

Institute of System Integration, Tsinghua University *Mar.2018-Jul.2018*
Project: Intelligent Tourism System *Research Assistant*
Advisor: Yushun Fan, Professor

- Participated in designing and realizing route planning algorithm of the Intelligent Tourism System which came online in our campus. Solved the problem of selecting scenic spots and planning visit order user favorability, with the method of improved genetic algorithm.
- Compared the algorithm with other methods like ant colony optimization and found this algorithm more accurate and efficient.

Institute of Control Theory and Technology, Tsinghua University *Oct. 2018 - Jul. 2019*
Project: UAV Hardware-In-Loop Simulation System *Research Assistant*
Advisor: Yisheng Zhong, Professor

- Independently designed a frame of Unmanned Aerial Vehicle (UAV) Hardware-In-Loop (HIL) simulation system including embedded controller of the flights based on Raspberry Pi and Pixhawk, simulated the module in the Gazebo environment , and ground communication system(GCS) with interface designed in QT.
- Found solutions for real-time communication between UAVs and PC, as well as for implementation of several functions including formation flight, obstacles avoiding and failure avoiding.

SKILLS AND WORKS

Programming Languages	C, C++, Python, JavaScript, MATLAB, Verilog HDL, SAS
Music Tools	Logic Pro, Cubase, Pro Tools, Sibelius
Composition Works	https://soundcloud.com/v2g3de6ogtfl/sets/demo-before-20
Standard English Test	**TOEFL:** 107 (R: 29; L: 29; S: 26; W: 23) **GRE:** V-152 (56%) + Q-170 (96%) + AW-3.5 (41%)
Second Foreign Language	**Japanese Language Proficiency Test N1** (Top Level)

INTERNSHIP EXPERIENCE

SAS China - Consultant *Jul 2019 - Oct. 2019*

Projects: Circuit Defect Detecting