JIAYING LI

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EDUCATION

Georgia Institute of Technology   **Atlanta, USA**

Master of Science in Music Technology (3.70/4.0)   01/2022 - 12/2023

Advisor: Dr. Nathaniel Condit-Schultz

Courses: Digital Audio Processing for Music, Digital Speech Signal Processing, Statistical Machine Learning, Machine Learning, Fourier Techniques & Signal Analysis, Music Perception & Cognition, Cognitive Science, etc.

The Chinese University of Hong Kong, Shenzhen   **Shenzhen, China**

Bachelor of Engineering in Electrical Information Engineering (3.23/4.0)   09/2017 - 05/2021

Minor in Philosophy   09/2018 - 05/2021

Advisor: Dr. Zhi-Quan Luo

Courses: Statistics, Linear Algebra, Optimization, Data Structures, Analog Integrated Circuits, Microprocessors & Computer Systems, Multimedia Coding & Networking, etc.

PUBLICATION & CONFERENCE

•**J. Li** and N Condit-Schultz, *"Four Chords Go a Long Way: Measuring Chord Progression Similarity in Chinese Popular Music"*, 2022 Society for Music Perception and Cognition (SMPC), poster session.

•K. Xue, Z. Liu, **J. Li**, X. Ji and H. Qian, *"SongBot: An Interactive Music Generation Robotic System for Non-Musicians Learning from A Song"*, 2021 IEEE International Conference on Real-time Computing and Robotics (RCAR)

RESEARCH EXPERIENCES

Woods Hole Oceanographic Institution (WHOI) Alvin Submersible VR Simulator   **09/2023 - 12/2023**

Advisor: Dr. Bruce Walker   Atlanta, USA

•Built the ALVIN submersible model in Blender based on a 360-degree photo and successfully integrated it into Unity.

•Tested the model on Meta Quest 3 and optimized its scale for human perception.

•Developed an orientation system and safety training workflow, allowing users to interact with Meta Quest 3 controllers after reading instructions.

Audio Technology II Interaction Website   **01/2023 - 05/2023**

Research Assistant, Computational and Cognitive Musicology Lab   Atlanta, USA

Advisor: Dr. Claire Arthur

•Developed a website using JavaScript, HTML and CSS, and migrated lecture notes for MUSI 2526 (Introduction to Audio Technology II) to the website.

•Built the required Python environment and wrote installation instructions for MUSI 2526 students.

•Built interactive modules utilizing D3js and Python Bokeh to illustrate and visualize Digital Signal Processing (DSP) concepts, including sampling, DFT, convolution, autocorrelation, etc.

Perceptual Harmonic Similarity Adapted to Human Ear   **01/2022 - 11/2022**

Advisor: Dr. Nathaniel Condit-Schultz   Atlanta, USA

Computational and Cognitive Musicology Lab, Georgia Institute of Technology

•Collected a dataset comprising harmonic progressions from the top 200 Chinese Pop music between 2012 and 2021.

•Developed the Chord Progression Similarity Index (CPSI) as an objective metric based on Markov chains tailored to human perception.

•Designed an experimental interface using jsPsych to test the validity of CPSI and gathered results from 34 participants.

•Analyzed the experiment data using the DBSCAN model alongside statistical tests.

SELECTED PROJECTS

Mid Air Text Interaction with Hand-Tracking 09/2023 - Present

Advisor: Dr. Yalong Yang Atlanta, USA

●Reviewed literature on mid-air text entry methods based on hand-tracking in Virtual Reality (VR) and compared their performances.

●Developed a hand-tracking VR text interaction system, including functions such as text entry, selection, copying, pasting, etc., using Unity.

Accessible Learning Material User Interface Prototype for Disabled Students 06/2023 - 08/2023

Advisor: Dr. Michael Helms Atlanta, USA

●Conducted 25 interviews regarding website design for visually impaired users and proposed a streamlined workflow model to optimize the design process.

●Developed a demo website using JavaScript, HTML, and CSS to showcase essential functions aiding visually impaired users in accessing learning materials.

●Designed an interactive mobile APP interface using Figma to illustrate and visualize the prototype.

Target Timbre Mapping Based on Raw Waveform 02/2023 - 09/2023

Advisor: Dr. Nathaniel Condit-Schultz Atlanta, USA

●Collected a 389-minute singing voice dataset, including 15 different songs sung by 7 different singers.

●Framed the vocal audio by pitch blocks manually and implemented the raw waveform singing voice timbre mapping using LSTM model.

●Designed a human-subject psychology experiment interface by jsPsych to identify factors influencing people's judgments of AI-generated vocals.

Arbitrary Modification of Speech Characteristics in Segmental Durations 02/2022 - 05/2022

Advisor: Dr. Biing Hwang Juang Atlanta, USA

●Implemented speech speed changer without pitch shifting using SOLAFS, Phase Vocoder, and WSOLA algorithms.

●Created an auto-segmenting system that outputs segmental timestamps and signal values to approximate the continuous contour input.

●Developed a Matlab GUI to enable arbitrary modification of speech speed and playback the modified signal.

INTERNSHIPS

User Experience Product Engineer Intern 08/2021 - 12/2021

SZ DJI Technology CO., LTD. Shenzhen, China

●Conducted perceptual experiments to analyze factors contributing to cybersickness, focusing on the optical characteristics of the lens and establishing acceptable product parameter ranges.

●Conducted ergonomics experiments to improve the design of DJI Goggles 2 mask's shape and weight considering the downward tilt of people's eyes when observing objects in a relaxed state.

●Led 20 interviews on drone safety, participated in the design of DJI Avata backup camera, and re-designed the drone simulator user interface.

Music Entertainment User Experience Intern 09/2020 - 03/2021

Kuwo Music, Tencent Music Entertainment Shenzhen, China

●Collected the daily click-through rate data of the Kuwo Music mobile APP and extended the Tencent Music database.

●Completed the fourth quarter product planning report and a sixteen-page competitive product analysis report.

SKILLS

Programming	Python, JavaScript, C#, Java, R, MATLAB, HTML, CSS
Visualization	Unity, Blender, D3js, Bokeh
Machine Learning	Numpy, Pandas, SciPy, TensorFlow, PyTorch, Keras
Tools	Microsoft Office, Adobe Premiere, Photoshop, Logic Pro, MAX, XMind, Axure