

# Zhiyu Alex Zhang

✉ zhiyuzha@umich.edu | 🌐 Personal Website | 🐙 GitHub | 🎵 Music Portfolio | 📍 Ann Arbor, MI

## EDUCATION

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### University of Michigan

Ann Arbor, MI

*B.S. in Computer Science (Dual Degree); **Current GPA: 3.96/4.00***

*Jan 2022 – May 2025 (Expected)*

*B.A. with Music Concentration (Dual Degree); **Current GPA: 3.96/4.00***

*Sep 2023 – May 2025 (Expected)*

### Wake Forest University

Winston-Salem, NC

*Cumulative GPA: 4.00/4.00*

*Sep 2020 – Dec 2021*

## RESEARCH EXPERIENCE

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### Visualizing Telematic Music Performance

Ann Arbor, MI

*Undergraduate Research Assistant at the University of Michigan*

*Jan 2023 – Present*

- Collaborating with Prof. Michael Gurevich, Prof. John Granzow, and Prof. Brent Gillespie on a project that explores methods of incorporating musicians' visual communication of effort, gesture, and movement into telematic performance without conventional video transmission.
- Conducted literature review and designed performer-audience studies that examine the effectiveness of human-computer interaction in this project's avatar system through audience surveys, performer interviews, and public performances.
- Captured Electromyography (EMG) data from performers' body movements with Qualysis, generated Automatic Marker Identification (AIM) models, and processed data transfer between embedded and host computers.

### Kangxi, Amiot, and “Improvements” to Instruments for Chinese Rituals

Winston-Salem, NC

*Undergraduate Research Assistant at Wake Forest University*

*Oct 2021 – Present*

- Working with Prof. Stewart Carter on a project to identify the sources of Father Amiot's manuscripts on Emperor Kangxi's reforms of Chinese musical instruments.
- Translated and critically analyzed detailed characteristics of 15 Chinese instruments from the 18th-century music treatises *Lǔlǔ Zhengyi Houbian* and *Lǔlǔ Zhengyi Xiabian*, rendering complex classical Chinese texts into modern English.
- Compiled two documents, one enabling quick search capabilities for Chinese instruments in *Lǔlǔ Zhengyi Houbian* and *Lǔlǔ Zhengyi Xiabian*, and the other collating the characteristics of musical instruments in the scope of the project, significantly improving research productivity and data accessibility.

## WORK EXPERIENCE

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### Shanghai SoundBug Technology Co., Ltd

Shanghai, China

*Software Engineer Intern*

*Jun 2023 – Aug 2023*

- Developed a 5-band Equalizer AU/VST plugin using C++ and the JUCE framework as an upgrade to the current stock Equalizer plugin in SoundBug, an educational Digital Audio Workstation (DAW).
- Designed an elegant user interface featuring low cut, low shelf, parametric, high shelf, and high cut filters accompanied by a Fast Fourier Transform (FFT) spectrum analyzer and bypass buttons to enhance user control over mixing and mastering.
- Implemented a user-friendly control system for adjusting filter parameters, including frequency cutoff, Q factor, filter gain, and filter slope.

### MicroPort NaviBot Co., Ltd

Remote

*R&D Intern*

*Jun 2022 – Aug 2022*

- Prototyped an open library of knee, hip, and ankle implants for the SkyWalker/Honghu robot-assisted surgical system to perform Total Knee Arthroplasty (TKA), Total Hip Arthroplasty (THA), and Total Ankle Replacement (TAR) with prostheses produced by any manufacturer, augmenting the system's commercial value.
- Conceived 15+ UI designs and the wireframe for a middle-fidelity prototype using Axure RP, offering surgeons an intuitive view of the functionalities in the upgraded open library.
- Spearheaded a proposal to automate anatomy-specific CT/fMRI image segmentation and landmark registration, leveraging the potential of machine learning to improve system efficiency by 50 times.

### Freelance Translator

Shanghai, China

*Jan 2018 – Present*

- Shanghai Education Press House (Apr 2023 - Present): Currently engaged in the translation of “Assessment in Music Education” by M. Fauley.
- Shanghai Conservatory of Music Press (Jan 2018 - Jun 2018): Contributed to the Chinese translation of “The Choral World: A Chronological, Historical, and Geographical Approach” by C. Ljunggren.
- Delivered precise translations, conducted detailed proofreading, and ensured adherence to strict formatting guidelines in various literary projects.

## SELECTED WORKS

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### Publications

**Zhang, Z.** 2019. *Alex's Musical Picture Book*. East China Normal University Press. (ISBN: 978-7-5675-9374-9)

### Translations

Ljunggren, C. 2018. *The Choral World: A Chronological, Historical, and Geographical Approach*. Translated from English by Wang, Y. and **Z. Zhang**. Shanghai Conservatory of Music Press. (ISBN: 978-7-5566-0171-4)

### Invited Talks and Presentations

June 2023. The 52nd Annual Meeting of the American Musical Instrument Society (AMIS). “Kangxi, Father Amiot, and ‘Improvements’ to Ritual Instruments in Eighteenth-Century China” (Presentation)

### Media Production

“Grandpa Cao and His Angels”. 2018. Produced by Yu, D. and **Z. Zhang** for the Music Education in China (MEiC) series at the Shanghai Conservatory of Music Press. A documentary episode raising awareness about Autism Spectrum Disorder (ASD), it reached an estimated audience of 1,000,000 viewers on Shanghai’s public transportation system.

## AWARDS & HONORS

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**The William E. Gribbon Memorial Award for Student Travel at the American Musical Instrumental Society (AMIS):** 2023 (\$2600)

**James B. Angell Scholar at the University of Michigan:** Winter 2022

**University Honors at the University of Michigan:** Winter 2022, Fall 2022, Winter 2023

**Dean’s List at Wake Forest University:** Fall 2021, Spring 2021, Fall 2020

## SKILLS

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**Programming Languages:** C++, Python, Faust, Max, Processing, JavaScript, HTML, CSS, R, SQLite

**Libraries and Frameworks:** PyTorch, Numpy, Scikit-Learn, JUCE, Flask, React

**Developer Tools and Softwares:** Git, Unity, Logic Pro X, FL Studio, OpenSCAD, Axure RP

## RELEVANT COURSEWORK

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**Computer Science Courses:** Machine Learning for Natural Language Processing, Computer Vision, Information Retrieval, Web Systems, Accessible Computing, Data Structures and Algorithms, Linear Algebra

**Music Courses:** Digital Fabrication for Acoustics, Computer Music, Introduction to Electronic Music Production, Introduction to Musical Analysis

## REFERENCES

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**Prof. John Granzow**, Associate Professor of Music

University of Michigan

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**Prof. Stewart Carter**, Professor of Music

Wake Forest University

+1 (336) 758-5106, carter@wfu.edu

**Prof. Danhong Yu**, Professor of Music Education  
Shanghai Conservatory of Music  
+86 139-1872-6918, yudanhong@shcmusic.edu.cn