

Benny (Shicheng) Zhang

Phone: 1-(217)-721-7190 Email: sz18@illinois.edu

Website: <https://shichengzhang.web.illinois.edu/>

EDUCATION

University of Illinois Urbana-Champaign (United States)

2018 - 2022

Bachelor of Science in Computer Science and Music

GPA: 3.81/4.00

Bachelor of Science in Liberal Arts & Sciences in Psychology, Cognitive Neuroscience concentration

Shenzhen College of International Education (China)

2014 - 2018

High School Diploma with A+ in GCSE English Literature & Drama Performance, A+AA in A-Level Math, CS & Physics

COURSES

Computer Science

Machine Learning for Signals, Data Mining, Artificial Intelligence, Natural Language Processing, Audio Computing Lab, Programming Language & Compilers, Intro to Computer Systems, Data Structures, Algorithm, Software Studio (SP22)

Psychology

Cognitive Neuroscience, Neurolinguistics, Behavioral Neuroscience lab, Memory and Amnesia, Evolutionary Neuroscience, Industrial & Organizational Psychology, Social Psychology, Cognitive Neuroscience Lab (SP22)

Music

Honor Music Theory, Honor Musicianship (rank: 3/105), Analysis of Music in 19th Century, Computer-based Music Representation and Synthesis, Electronic Music Synthesis, Electroacoustics Music techniques, Music History, Jazz Aural Skills, Music & Sound & Technology, C++ Audio Application studio, World Music

Additional Experiences:

2019 - Stanford CCRMA Audio Neural Nets Workshop

2019 - Peking University Summer School - Modern Approach to Machine Learning

EXPERIENCE

Computer Science

Tencent Music Entertainment

June 2020 - Sept 2020

Multimedia Algorithm Research Internship

Shenzhen, China

- Carried out Exploratory Data Analysis on the million-scaled user data in the QQ music with pandas and matplotlib.
- Researched, invented, and implemented a novel *Levenshtein-distance* based music harmony information retrieval deep learning system for mining future pop hit songs from the world largest copyrighted music database. Hit-song prediction precision increased significantly. Algorithm was integrated into PDM and carried out A/B Test.

CAMIL Lab at UIUC

Aug 2019 - May 2020

Independent Researcher, supervised by UIUC ECE Prof. James Beauchamp

Urbana, IL

- Researched and implemented a Short time Fourier Transform based f-0 frequency detection system for recognizing music harmony in sinewave generated music.
- Designed and implemented IIR filter, Convolutional Reverb, NMF-based source separation, HRTF-based sound localization, Independent Component Analysis, ISOMAP algorithm in SciPy (Python).

Freelance Music Researcher

Aug 2021-Present

Independent Researcher

Urbana, IL

- Designed a new symbol system describing the western tonal music inspired from the Chinese zither (GuQin) tablature representation. And converted this chord symbol into a machine learnable embedding containing more information than the normal roman numerals and jazz chord symbols representation.
- Analyzed Liszt Transcendental Etude's No.4-Mazappa and La Campanella in Schenker style and resynthesized a new piece with corresponding textures and melodies by python.
- Developed an instrumentation and voicing informed deep chord recognition system with a domain-specific-knowledge-empowered artifact dataset.

Course Assistant for Computational Music

Aug 2020-Present

MUS105 Computational Music I FA20

Urbana, IL

- Assisted Prof Henrich Taube on course logistics, hosted the class piazza forum, answered registered student programming question, and provided career suggestions to class member.

Psychology

Electrophysiology and Language Processing Lab at UIUC

Aug 2021-Present

Research Assistant

Urbana, IL

- Operating 32-nodes EEG headset with capping and cleaning process for psycholinguistics experiment.
- Learned data processing techniques on collected EEG data, such as Independent Component Analysis for removing muscular movement in MNE-Python.

Behavioral Neuroscience Lab at UIUC**Jan 2021-May 2021***PSYC 311 course student***Urbana, IL**

- Dissected sheep brain and labeled neural structures from both sagittal and coronal view, identified all the main white and grey matter with their associated physiological function in central nervous system.
- Handled experiment rat in vivo and carried out experiment including topics such as alcohol-anxiety, elevated T-maze, water maze, and reproduction. Wrote scientific reports for the above studies.

Freelance Algorithm development with EEG data**Jan 2021-Present***Independent Researcher***Urbana, IL**

- Built an epilepsy data sonification algorithm mapping epilepsy data into different degrees of musical tonality.
- Utilized Emotive EPOC-X 16-nodes commercial grade EEG headset to map ERP event to musical parameter such as musical chord type through Open Sound Control.

Music**Harmonia – Illiac Software (US)****Jan 2020 - Present***Marketing for the Great China Area***Urbana, IL**

- Taking responsibility of the product localization and marketing in the Great China area for the state-of-the-art music harmony education software (*harmonia.illiacsoftware.com*) created by Heinrich Taube.
- Presenting software demo and effectively reach hundreds of target users at the 8th Conference on Sound and Music Technology (CSMT) in China.

Spaceport Record (JP)**Apr 2021-Present***Composer, Songwriter***Tokyo, Japan**

- Collaborated with famous lyric writers, arrangers, and singers from Japan and China to create commercial music.
- Mainly taking charge of melody writing, harmony designing, mixing strategy designing, and midi production.

Independent Music Producer**Feb 2016 - Present***Music Producer, Music Theory & Technology Key opinion leader, Teacher***Freelance**

- Owned an artist label 本尼桑 (*Benny san*) on social media called Zhihu with 46,000+ followers.
- Wrote articles on jazz improvisation, music theory and music technology, had 1,000,000+ views.
- Composed commercial music in Jazz, J-pop, C-pop, EDM, Game Background Music Style.

UIUC ACG Piano Improv & Composition Club**Aug 2019 – Feb 2020***President, Founder, Lecturer***Champaign, IL**

- Held weekly workshops teaching Japanese POP music theory, Computer Music technique, Instrumentation technique, Vocaloid editing techniques, Mixing technique to 169 registered members.
- Closed due to COVID-19

Shenzhen College of international education official school anthem project**Dec 2017 - Jun 2018***Director, Composer***Shenzhen, China**

- Led 50 high school students to compose, record, and mix an official school anthem
- Coordinated human resource, composition, lyrics writing, and staging for live performance at the Shenzhen Grand Theater hosting 600+ audience

PUBLICATIONS**Musical Information Retrieval**

- Wang, Z., Li, J., Chen, X., Li, Z., **Zhang, S.**, Han, B., & Yang, D. (2019). Musical Instrument Playing Technique Detection Based on FCN: Using Chinese Bowed-Stringed Instrument as an Example. *arXiv preprint arXiv:1910.09021*.

- Wang, Z., **Zhang, S.**, & Chen, X. (2020). Exploring Inherent Properties of the Monophonic Melody of Songs. *arXiv preprint arXiv:2003.09287*.

MUSIC PRESENTATIONS**(2021) Electroacoustic composition: Mutant**, U of I Composer forum**Urbana, IL****(2021) Electroacoustic composition: Evolved**, U of I Composer forum**Urbana, IL****(2019) Piano: Improvisation with quartal harmony & gypsy scales**, Student Composer Concert**Urbana, IL****(2018) Piano performance: SCIE school anthem**, Shenzhen Grand Theater**Shenzhen, China****CONFERENCE & MEMBERSHIPS**

- Membership in Society of Music Perception and Cognition

2019 - 2021

- Membership in Society of Music Theory

2019 - 2021

- Attendance in 21st International Society for Musical Information Retrieval Conference

2020

- Attendance in 2020 Audio Developer Conference

2020

HONORS

- | | |
|---|--------------------|
| - University of Illinois Edmund James Scholar Honor Program | 2019 - 2021 |
| - University of Illinois Dean's list | 2019 - 2021 |
| - Waterloo Euclid Mathematics Competition, top 25% | June 2017 |

SKILLS

Computer Science

- Proficient in C++ (JUCE) and Python (NumPy, Matplotlib, Pandas, PyTorch, SciPy, Seaborn, Scikit-learn, PyQt)
- Intermediate in C, Java, OCAML, Git, Command line, Linux, SQL, Flask

Music

- Logic Pro, FL Studio, Audacity, SPEAR, Supercollider, GRACE, Reaper, MuseScore, Vocaloid, Kontakt, FabFilter, Waves
- Composition & Improvisation in Jazz, Japanese pop, Chinese pop, Electronic Dance Music
- Piano (8 years), Guitar (2 years), Violin (2 years), Drum (months)

Psychology

- Experienced in MNE-Python and SciPy

Miscellaneous

- LaTeX, Adobe Photoshop, Adobe Premier Pro, Microsoft Office, and Chinese Cuisine

HOBBIES

I like landscape photographing, cat videos, RAYARK music rhythm games, and road cycling in my spare time. Walking a trip in random cities is also my favorite.