Xiaoxuan (Andrina) Zhang

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SUMMARY

I am an energetic software engineer and computing artist. I create engineering projects with my artistic and aesthetic expression. I create interactive software system / installation as well as produce electronic music. I look forward to transforming avant-garde technological ideas into the real world by contributing my interdisciplinary background to my future team.

EDUCATION

Master of Science in Computer Science Applicant for Fall 2026

University of California – San Diego *September 2020 - June 2024*
B.S. Cognitive Science specialized in Machine Learning & Neural Computation Overall GPA: 3.84
B.A. Interdisciplinary Computing and the Arts - Computer Music & Music Technology Major GPA: 4.0
Minor in Computer Science & Engineering

Relevant Online Certifications
École Polytechnique Fédérale de Lausanne – **EPFL** *May 2024*
- Digital Signal Processing Specialization (Credential)

Korea Advanced Institute of Science and Technology – **KAIST** *May 2024*
- Intro to Acoustics (Credential)

EXPERIENCE

Massachusetts Institute of Technology - Media Lab, Cambridge, MA **October 2025 – Present**
Research Software Engineer – Opera of the Future Group
- Building a multi-channel real-time spatial audio software system for Boston Symphony Orchestra.
- Designing and building the audio reactive electro-visual installation system for a top luxury fashion brand.

Bose Corporation, Framingham, MA **July 2024 – September 2025**
Software Engineer / Product Innovation (Co-op, Full-time responsibilities)
- Engineered and optimized audio machine learning algorithms for consumer devices, applying large-scale data wrangling, manual dataset labeling and curation for fine-tuning, and analysis to improve inference accuracy.
- Conducted manual acoustic data collection and measurement campaigns in controlled test rooms, designing and implementing audio recording protocols to generate high-quality datasets for research validation.
- Built a distributed orchestration system for multi-device home theater setups, integrating Python scripts to automate command-line calls, adb, and Linux workflows.
- Developed embedded prototypes on STM32 with C and FreeRTOS, validating performance through oscilloscope and hardware testing.
- Collaborated across research and product teams, translating experimental results into deployable software features.

Massachusetts Institute of Technology - Media Lab, Cambridge, MA **November 2024 – March 2025**
Software Engineer / Research Assistant – Opera of the Future Group [part-time]
- Created Max/MSP interactive software Interface with Python and Flask API to build web audio synthesizer software.

Qualcomm Institute, San Diego, CA **July 2023 – June 2024**
Research Software Engineer Intern – Sonic Arts Research & Development
- Developed a real-time adaptive beamforming installation in Pure Data with a custom C++ plugin, achieving 11 ms latency for a 14-speaker array; scaled and validated on a 62-speaker, 4m wavefield synthesis setup.
- Integrated Kinect V2 depth sensing for real-time, user-tracked beam steering, designing and modular-testing the sensor pipeline for interactive gallery installations.
- Built Python web scrapers to collect and curate HRTF datasets, conducting spatial audio analysis in MATLAB.

SELECTED PROJECTS

Music Genre Classification with kNN, SVM, CNN and RNN implementation [Link]

- Led a team of 5. Organized the meetings and frequently met the professor and the teaching assistants.
- Applied Exploratory Data Analysis and Data Visualization, after collected dataset and wrangled the data.
- Implemented supervised and unsupervised learning techniques and deep learning algorithms – Convolutional Neural Network and Recurrent Neural Network in Python (PyTorch, scikit learn, seaborn…).
- Designed the models and tested the algorithm and fine-tuned the weights and hyperparameters on GPU.

Topological Data Analysis to Phoneme Neural Signals (Brain-Computer Interface Hackathon top prize) [Link]

- Won "***Most Innovative Project***" prize in BCI Hackathon instructed by professor Vikash Gilja and PhD students.
- Wrangled the data and contributed to the Topological Data Analysis (TDA) with Python (PySpike, giotto-tda, seaborn…) from an interdisciplinary perspective in neuroscience, digital signal processing and topology.

TALKS, PERFORMANCE & INSTALLATIONS [LINK]

Talks

- Guest Lecturer @ UC San Diego [COGS 118C Neural Signal Processing] — February 16, 2024; February 19, 2025
- Sonic Arts Intern Presentation @ Qualcomm Institute — November 17, 2023

Performance

- Bleep Blorp - Festival of Synthesis & Electronic Music @ UMass Lowell — March 29, 2025
- Bose Talent Show @ Bose Headquarters — August 15, 2024
- One Fish Two Fish Percussion Ensemble @ Conrad Prebys Music Center — All Seasons, June 2023 – June 2024

Installations

- *"Is This How Nature Talks"* with Alicia Zhang @ Adam D. Kamil Gallery — June 11 – 13, 2024
- *"In A Star, Give A World"* X Mandeville Art Collective @ Adam D. Kamil Gallery — May 7 – 9, 2024

SKILLS & ACTIVITIES

Technical

- Python, C++, bash, Java, MATLAB, C
- Max/MSP, Pure Data, JUCE, Xcode, RaspberryPi
- LaTeX, Version Control with Git, XML, Digital Signal Processing, EEG Lab / EEG wet lab data collection
- Soldering, CAD for Laser Cutting

Creative

- Ableton Live Suite, Reaper, Audacity, Pro Tools
- Final Cut Pro, Adobe Photoshop / InDesign, Canva, Figma, Photography

Others

- Languages: English (Fluent), Mandarin Chinese (Fluent), French (Intermediate) and Spanish (Elementary)
- Sports: Boxing, Tennis, Rowing Machine

MEDIA COVERAGE [LINK]

2025 **[Bold Journey] Meet Andrina Zhang**

2025 **[CanvasRebel] Meet Andrina Zhang**

2024 **[SD Voyager] Conversations with Andrina Zhang**

HONORS & AWARDS

2024 **Provost Honors** for all academic quarters - Issued by UC San Diego

2020 **AP Scholar with Distinction Award** - Issued by College Board