

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 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](#))

Johns Hopkins University

April 2024

- Using Sensors With Your Raspberry Pi ([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 [\[Full Portfolio\]](#)

Synthesizer AU/VST3 plug-in with JUCE and C++ for any DAWs [\[Link\]](#)

- Built a custom JUCE wavetable synthesizer, implementing **0–10 fold wavefolding**, **ADSR envelopes**, and a **nonlinear exponent shaper** to enable wide timbral variation and expressive modulation with visualizer.
- Developed efficient DSP code in C++ with real-time safe parameter smoothing and host-automatable controls using `AudioProcessorValueTreeState`.

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 Talk “AI on the big stage” @ Bang & Olufsen [Denmark, remote] November 20, 2025
- 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, Archery, 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