

Zining (Emma) Wang

Brooklyn, NY | zw3422@nyu.edu | emmacreate.com

I design physical-digital systems whose technical depth serves felt human experience. My training is in audio and music engineering: digital signal processing, real-time C/C++ on DSP hardware, analog circuit and PCB design, and the craft of sound itself. My interest is wider than audio: wellbeing technology, embedded machine learning on tiny devices, immersive and interactive work, and the product thinking that decides what is worth building at all.

Now an M.S. student in Integrated Design & Media at NYU Tandon, a graduate research assistant at Low Pwr Lab, and a member of NYU's Graduate Product Management Bootcamp. Looking for summer 2027 internships where hardware, signal, and human experience meet: embedded and hardware R&D, audio and DSP software, and technical product roles in wellness and consumer devices.

EDUCATION

New York University, Tandon School of Engineering

Expected May 2028

M.S., *Integrated Design and Media* — Brooklyn, NY

- Graduate Product Management Bootcamp (NYU PMC), fall 2026 cohort — one of nine students selected

University of Rochester

May 2026

B.S., *Audio and Music Engineering, with distinction* — GPA 3.69 / 4.00 — Rochester, NY

- Relevant coursework: Audio Software Design (C/C++), Audio DSP (MATLAB), Audio for Games (Wwise), analog circuit design, room acoustics

EXPERIENCE

Graduate Research Assistant, Low Pwr Lab — NYU Tandon

Sep 2026 – Present

Solar and off-grid, low-power computing lab led by Prof. Benedetta Piantella

- Developing a build-your-own-cyberdeck project (ESP32-based, touchscreen, audio) as hands-on course material under consideration as a future NYU course
- Co-designing upcoming community workshops: hands-on, creative electronics builds (LED circuits) that introduce beginners to the lab

Sound Designer (contract), Indie Game Team

2025

Three-person team; sound-effects scope on a revenue share

- Designed ambient audio for a narrative game chapter: layered sound palettes, leitmotifs, and sonic throughlines for the detective character and the consciousness-dive sequences
- Built sci-fi UI sound in Reaper and SuperCollider; composed game music

EMBEDDED & MACHINE LEARNING

Audio-Based Mechanical Fault Detection — Senior Capstone

Sep 2025 – May 2026

Arduino Nano 33 BLE Sense Rev2, Edge Impulse, MATLAB

Three-person team building an on-device system that classifies four machine states (Healthy, Gear_Fail, No_Load, Machine_Off) from audio before breakdown. My part: signal processing, data collection, and ML training.

- Designed the feature front end: tuned STFT and Mel-frequency energy (MFE) parameters — 40 ms Hann frames, 50% overlap, 256-point FFT — against the board's 256 kB SRAM budget; wrote the MATLAB RMS-normalization preprocessing
- Ran a month of test-bench recording across three microphone positions and three rooms, disassembling and reassembling the machine between takes so the model would not learn a single setup
- Trained and deployed a two-layer 1D convolutional classifier; in live testing it caught every fault state and never labeled a fault as healthy
- Explored a multi-model design pairing the classifier with K-means anomaly detection to flag unseen faults — 93.7% accuracy in offline validation, though too large to deploy within the board's SRAM
- Diagnosed the main weakness (Healthy vs. Gear_Fail confusion) as a windowing and spectral-resolution issue tied to shaft RPM, and documented the system against ISO 13374 condition-monitoring principles

Guoguo — Voice-Responsive Companion Cyberdeck

In progress

ESP32, Edge Impulse

- Building a personal cyberdeck with touchscreen, sound system, and planned Wi-Fi; trained an Edge Impulse voice-detection model deployed on ESP32 so the device recognizes and responds to its owner's voice

AUDIO SOFTWARE & DSP

Real-Time Audio Effects on SHARC DSP

Oct 2025

C++, CrossCore Embedded Studio

- Programmed six real-time effects (reverb, auto-wah, delay, compressor, and more) on SHARC hardware, with parameters mapped to the module's physical knobs and buttons
- Implemented FFT-based processing and time-domain building blocks — filtering, envelope detection, delay lines — as reusable header modules

Multi-Cycle Wavetable Synthesizer Plug-In

Dec 2025

C++, JUCE

- Engineered a synthesis engine that sequences and interpolates between samples and user-defined waveform frames (sine, saw, triangle, square) in real time
- Implemented a custom voice struct for independent oscillator state and phase tracking, a variable-state LFO, and FM with adjustable modulation index and ratio
- Added guard-point optimization to suppress artifacts during real-time scanning, and a drag-and-drop UI that updates the wavetable sequence live

Sound-Healing Instrument Emulation

May 2025

Max/MSP, Jitter

- Recreated the timbres of sound-healing instruments with envelope shaping and FM synthesis, with FFT-driven real-time visuals from live microphone input

Spectral Analysis and Phase Vocoder

Mar 2025

MATLAB, coursework

- Compared window functions with zero-padding for spectral resolution; extracted harmonic content with FFT peak detection
- Built STFT pitch-shifting and time-scaling with OLA/WOLA resynthesis and analyzed the reconstruction artifacts of each

HARDWARE & CIRCUITS

Bass Guitar Headphone Amplifier PCB

May 2026

KiCad

- Designed, laid out, and routed an analog headphone amplifier board from schematic to fabrication-ready Gerber files, with the design-rule check brought to zero errors

Guitar Pedal Circuit

2025

LTSpice

- Simulated a multi-stage op-amp drive pedal with diode clipping and global feedback, iterating gain staging and clipping character in simulation

Acoustics

Coursework

- Circular diffuser design and room acoustic measurement

GAMES, XR & INTERACTIVE

Deep In My Mind — VR Mindfulness Game

May 2026

Unity

- Designed and programmed a VR anomaly game built to bring the player into mental relaxation, with custom interaction mechanics
- Modeled and animated the main interactive components and created the sound effects

Narrative Game on Mindful Healing Practices

Dec 2024

C++

- Designed and programmed four subgames themed on chakra healing, tarot reading, the Sedona method, and gratitude journaling, with seven storylines converging on three endings driven by emotional state and player choice
- Implemented a 22-card tarot system with file parsing and deck shuffling, and authored three original interpretations for each major arcana card

Game Audio for “Cube”

May 2025

Wwise

- Designed, created, and integrated sound effects and music for all core mechanics, using State and Switch containers to drive audio from game events and player status

Godot Audio Research

2025

- Explored Godot's audio implementation, including a Wwise-Godot GDExtension integration

LEADERSHIP & COMMUNITY

No Jackets Required, University of Rochester — Music & Logistics Coordinator

Aug 2025 – May 2026

- Coordinated 20+ musicians across 8 club events, building setlists matched to each event's theme and keeping performers and organizers aligned
- Scheduled and supervised weekly rehearsals; served as show technician for the annual large-scale showcases (live sound, stage setup, technical logistics)

Audio Engineering Society, University of Rochester — Vice President

Jan 2024 – Jan 2025

- Organized academic events, guest speaker sessions, study groups, and peer mentorship for students at different experience levels

Freeflow (dance), University of Rochester — Audio & Lighting Manager

Jan 2024 – Jun 2025

- Designed lighting cue sheets from the style of each song; organized workshops with guest teachers from New York City and edited performance audio with them

SKILLS

Programming: C/C++, JUCE, Max/MSP and Jitter, SuperCollider, Faust, MATLAB

Embedded & ML: Arduino, ESP32, SHARC DSP / CrossCore Embedded Studio, Edge Impulse (TinyML), Unity

Signal Processing: FFT/STFT spectral analysis, windowing, filter design, phase vocoding, real-time effects, Mel-frequency features

Hardware & Acoustics: Analog circuit design, KiCad PCB layout, LTSpice simulation, diffuser design, room acoustic measurement

Audio Production: Wwise, Pro Tools, Reaper, sound design, game audio integration, composition

Product: Product discovery and validation (NYU PMC, in progress), requirements gathering, technical writing

Languages: English, Mandarin Chinese (fluent)

BEYOND WORK

I play bass and guitar, mostly in bands that rehearse written parts, and have a soft spot for Japanese jazz fusion. I rock climb, dance, keep a mindfulness routine, and read. The thread running through all of it is the same one in the work: attention to how something feels from the inside.