Annie Chu

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TL;DR

I am a researcher at the intersection of audio, machine learning, and human-centered design. My work centers on (1) developing innovative and inclusive audio models & interfaces for creative audio applications, with a parallel focus on (2) investigating how audio technologies shape and are shaped by cultural practices, user perceptions, and broader societal contexts.

Research interests: human-centered ML for creative audio workflows, multimodal learning, intelligent audio production, human-AI co-creation, music information retrieval, ethical & social implications of new audio technologies

EDUCATION

Northwestern University, PhD — Evanston, IL
Technology & Social Behavior (Dual CS + Communications) — *2023 - Present (expected 2028)*
Advisor: Bryan Pardo

Olin College of Engineering, B.S. — Needham, MA
Major: Electrical Engineering, Focus: Media Arts — *2018 - 2022*

RESEARCH

Interactive Audio Lab – Northwestern University — Evanston, IL
Graduate Researcher, Advisor: Bryan Pardo — *2023.09 - Now*
- Researching audio and multimodal ML models for intelligent audio production applications

Music Cognition & Perception Lab – Northwestern University — Evanston, IL
Graduate Researcher, in collaboration with Dr. Dan Shanahan — *2024.09 - now*
- Researching listening in the age of streaming; how users' perception and mental models of recommendation algorithms shape music discovery and listening behaviors on streaming platforms (examining algorithmic awareness, consumption patterns, etc)

Lu Lab – Northwestern University — Evanston, IL
Graduate Researcher, in collaboration with Dr. Yingdan Lu — *2024.03 - 2024.10*
- Developed a methodological framework for adapting audio models to address diverse social science and organizational communications research (paper in progress)

Music and Audio Research Lab (MARL) – New York University — New York, NY
Research Assistant, SONYC — *2022*
- Deployed and analyzed IoT sensor suite for noise pollution data collection on Sounds of New York City (SONYC) project, automating node deployment and data analysis for ML-based metric extraction and visualization

DSP Research – Reverb Algorithms — Wellesley, MA
Undergraduate Researcher, Advisor: Andrew Davis — *2021 - 2022*
- Designed and implemented custom reverb algorithms in Python and JUCE

PAPERS

1. **A. Chu**, P. O'Reilly, J. Barnett, and B. Pardo. Text2fx: Harnessing clap embeddings for text-guided audio effects. In *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2025
2. P. O'Reilly, J. Barnett, H. Flores García, **A. Chu**, N. Pruyne, P. Seetharaman, and B. Pardo. The rhythm in anything: Audio-prompted drums generation with masked language modeling. In *ISMIR)*, 2025

WORKSHOPS

1. **A. Chu**, H. Flores García, P. O'Reilly, B. Pardo. "Text2EQ: Human-in-the-Loop Co-Creation Interface for EQ." *Accepted Late-Breaking Demo (LBD), ISMIR 2024*

INDUSTRY EXPERIENCE

Adobe
Research Intern *Summer 2025*

The Engine
Program Manager *2023*

Embr Labs
R&D, Hardware UI Engineer *2020-2021*

TEACHING

Teaching Assistant
Northwestern University *Spring 2025*
CS352: Machine Perception of Music and Audio

Instructor
Northwestern University *Winter 2025*
Generative Modeling (with Julia Barnett)

Conference Workshop Instructor
OCMC 2024 *Sep 2024*
Faces to Soundwaves: Unpacking Organizational Communication through Computational Multimodal Analysis (with Dr. Yingdan Lu)

Instructor
Northwestern University *Spring 2024*
Human-Computer Interfaces for Musicking (with Hugo Flores García)

Teaching Assistant
Olin College of Engineering *2018 - 2019*
Introduction to Sensors, Instrumentation, and Measurement

TALKS

Leveraging ML to Understand the Digital Soundscape of Social Movements on TikTok
NSF Sound Travels *Sep 2024*

Algo-Rhythms: How Music Recommendation Systems Keep You in Tune
Scientists for Migrant Learning & Education *May 2024*

HONORS AND AWARDS

NSF Graduate Research Fellowship Program Honorable Mention
National Science Foundation *2025*

National Merit Scholarship
National Merit Scholarship Corporation *2018-2022*

Olin Merit Tuition Scholarship
Olin College of Engineering *2018-2022*

Women in Music Information Retrieval (WiMIR) Conference Grant
ISMIR 2022 *2022*

SKILLS

- **Programming Languages** - Python, MATLAB
- **Machine Learning** - PyTorch, Scipy, Numpy, Scikit-learn, TensorFlow
- **Audio Production** - Logic Pro X
- **Design Methods & Prototyping Tools** - Figma, Adobe XD, Wireframing, User Journey Mapping, Participatory Design, Speculative Design, Usability Testing
- **Qualitative Research Methods** - Grounded Thematic Analysis, Interview Coding, Survey Design