Nicholas Boyko

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Audio professional pursuing challenges at the intersection of signal processing, sound engineering, and machine learning.

Education

New York University — New York, NY

Master's in **Music Technology**, GPA: 3.96 — Aug. 2023 – May 2025

Bachelor's in **Music Technology**, minor in **Mathematics**, GPA: 3.85 (cum laude) — Aug. 2020 – May 2024

Coursework: Digital Signal Theory; Real-Time Embedded Systems; Advanced Musical Acoustics; Audio Streaming Tech; Deep Learning & Music Information Retrieval; Analog & Digital Electronics; Honors Linear Algebra

Experience

New York University — New York, NY

Digital Signal Theory Teaching Assistant — Jan. 2025 – May 2025

- Tutored 40 students in DSP, covering convolution, Fourier Transform, and filter design; provided targeted feedback to faculty on exams, quizzes, and homework questions, and led group and one-on-one tutoring sessions.

Music Department Technology & Inventory Support — Aug. 2022 – May 2025

- Managed IT support for 100+ staff, maintaining 250+ devices and file servers with 100% user satisfaction.
- Drove migration of 7,000-item equipment Filemaker inventory to future-proof Google AppSheet system.
- Led project to obtain usage data of all devices from OS databases via Python script for internal analytics.

Dolan Studio Assistant Engineer — Aug. 2023 – Dec. 2023

- Managed Pro Tools recording sessions for 20+ ensembles, overseeing equipment setup, teardown, and I/O.

Freelance

Audio Fingerprinting for Advertisement Search — May 2024 – Aug. 2024

- Implemented spectral peak-picking algorithm in Python with over 90% detection accuracy on test dataset.
- Authored feasibility analysis and technical documentation, and delivered results directly to the client.

Projects

Hyperbolic Genre Embeddings for Music Classification | *Python, PyTorch* — 2024 – 2025

- Master's thesis in Music Technology, under the advisement of Dr. Juan Pablo Bello and Dr. Brian McFee.
- Developed music genre classification framework, inferring hierarchical label structures to improve accuracy.
- Utilized audio feature extraction techniques and metadata-informed genre taxonomy analysis.

Dynamic Stochastic Wavetable Synthesis | *Python* — 2024

Boyko, N. & Canfield-Dafilou, E. (2024). Spectral Analysis of Stochastic Wavetable Synthesis. In *Proceedings of the 27th International Conference on Digital Audio Effects (DAFx24).*

- Presented novel sound synthesis technique utilizing stochastic lookup-table alterations for audio generation.
- Implemented and extended existing algorithm in Python notebook prototype with spectral analysis.

Beamforming and DOA Estimation for Speech Enhancement | *Python* — 2024

- Implemented beamforming and Direction-of-Arrival (DOA) noise-reduction algorithm in Python.
- Utilized MUSIC super-resolution technique for DOA estimation and traditional delay-and-sum beamforming for noise isolation and speech enhancement, lowering SNR of simulated "cocktail party effect" audio by 15dB.

Activities

WNYU Radio — New York, NY

Host & Archivist — 2021 – 2025

- Hosted *Hellhole*, weekly metal show on college radio station; arranged, mixed, & archived live music broadcast.
- Orchestrated the archival process of 1,000+ physical records, and created long-term storage solutions.

Additional Skills

Certifications & Training: Stanford CCRMA DL4MIR and Differentiable Digital Signal Processing (DDSP)
Awards: Steinhardt Outstanding Service & Leadership Award, NYU Founders' Day Award, Dean's List 2020-2024
Technical Skills: Python, C/C++/Arduino/STM32, Max/MSP, Filemaker, Pro Tools, Logic Pro, Ableton Live
Frameworks & Libraries: NumPy/SciPy, librosa, FFmpeg, PortAudio, Platform.IO, JUCE, PyTorch/TensorFlow