

DR BRENDAN O'CONNOR

AI Researcher · Software Engineer · Signal Processing

CONTACT

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TECHNICAL SKILLS

Languages & Tools: Python, Bash/Linux, Git/GitHub, php, C++

ML Frameworks & Libraries: PyTorch, NumPy, SciPy, Pandas, scikit-learn, Hugging Face Transformers

ML Architectures: Transformer, Diffusion, GAN, VAE, CNN, RNN, Attention; generative, discriminative, and self-supervised modelling

Applied AI: Time-series analysis, embedding space modelling, anomaly detection, classification, sequence-to-sequence learning, multimodal data fusion

MLOps & Infrastructure: GCP, AWS, Docker, GitHub Actions, CI/CD pipelines, deployment

Signal & Data Processing: Audio feature engineering (MFCCs, mel-spectrograms, learned embeddings), source separation, speaker diarisation, voice transformation, TTS, preprocessing

Research Skills

- Experimental design, dataset curation, annotation pipeline development
- Model evaluation, benchmarking, and statistical testing
- Academic publishing and peer review; conference presentations and tutorials (ISMIR, SMC, CMMR, C4DM, ICASSP)
- Translating research into production systems across interdisciplinary teams

Other

- Project and team leadership (coordinated multi-stakeholder technical projects)
- Recruitment and mentoring (hired and onboarded engineers, researchers, and developers)
- Strong communication: 10+ years of teaching and tutoring; international conference presenter
- Cross-domain creative problem-solving

PROFILE

AI researcher and software engineer specialising in machine learning and signal processing applications, with expertise in voice analysis, synthesis, and mixed-signal data. I have a PhD from the Centre for Digital Music (QMUL), publishing on voice conversion and music information retrieval. During and following on from my research in computer science, I have worked in industry positions developing and deploying ML and DSP models at scale.

My work spans across rigorous scientific research, production software engineering, and artist technological design. Across these disciplines, I routinely work with AI coding agents to accelerate prototyping, code review, and technical documentation, treating them as a standard part of a modern ML development workflow. While I specialise in music and audio ML, I am eager to apply my expertise in time-series analysis, ML synthesis and analysis, and feature engineering to other domains.

PROFESSIONAL EXPERIENCE

Lead Researcher of AI Voice [Sound Patrol, USA](#)

10/2025 – Present

- Led Voice AI research for a production-scale music infringement detection platform serving major label clients including Sony and UMG, owning the voice biometrics research roadmap end-to-end.
- Collaborated with leadership to define new product directions and solve emerging challenges
- Developed and shipped our first novel voice-biometric AI-detection model distinguishing voice-cloned vocals from wholesale AI generation (Suno/Udio-style) and human recordings, achieving >90% accuracy on internal test sets; model directly informed triage decisions for enterprise clients.
- Built and maintained training data pipelines for AI vocal detection, curating and quality-controlling datasets of over 100k+ AI vocal tracks, contributing directly to the company's 96% recall on AI content and perfect 100% recall on human content in production evaluations.
- Enhanced the singer-specific voice verification pipeline for NIL (Name, Image and Likeness) infringement detection, leveraging voice-level embedding systems to validate vocal identities at scale for high-priority enterprise clients, providing systematic evaluation and bumping top-5 retrieval rates from 44% to 96%.
- Led weekly Voice Intelligence research group, translating research findings into product deliverables, engaging directly with C-suite on contract-critical technical questions from clients including Sony and UMG, and scoping future research directions and publications.

Researcher of AI Music [Jammable Ltd, London](#)

03/2024 – 10/2025

- Led development and deployment of ML applications including automatic transcription, TTS, voice cloning, lyrics conversion, and audio enhancement tools.
- Delivered research-to-production solutions covering data pipelines, training, evaluation, deployment, and iterative optimisation.
- Collaborated with leadership to align research outputs with product goals, ensuring usability and scalability.
- Engaged in user-centred design, iterating on models to meet client demands.

EDUCATION

PhD, Media Arts Technology

Queen Mary University of London
2024

Focus: AI systems, classic ML, generative modelling, voice signal, data analysis and engineering.

MA, Music Technology and Composition

University of West London
2015

Coursework: non-linear recording techniques, interactive coding, digital systems, electroacoustic composition.

BMus, Music

MTU Cork School of Music
2011

Emphasis on music technology, classical performance, orchestration, and teaching.

- Contributed to the research community through publications and conference participation.

Teaching School of EECS, Queen Mary University of London

09/2019 – 04/2024

- Taught machine learning, computer vision, AI search, and digital systems to undergraduate and postgraduate cohorts.
- Guided student projects in data preprocessing, ML application, and evaluation.
- Delivered lab sessions using Python and C++/Arduino for applied interactive systems.
- Supervised academic writing, project planning, and scientific communication.

Research Scientist Intern TikTok, London

06/2022 – 09/2022

- Developed pipelines for generative symbolic music systems that enhanced musical attribute outputs
- Experimental research combining GANs with VAEs, exploring novel solutions for backpropagation through symbolic representation.
- Presented results in prototyping and evaluations to research teams and integrated insights into ongoing projects.

Research Intern MXX, London

03/2019 – 09/2019

- Built singing voice detection models, achieving 89% accuracy on internal datasets.
- Managed dataset collection, annotation, and preprocessing pipelines.

Earlier Roles Misc

2007 – 2020

- Freelance developer: Interactive systems for audio and processing tools.
- Audio Visual Manager, Earcandy (London): recruited and managed sound engineering teams and technical logistics for live events.
- Tutor and educator in ML concepts, coding practice, audio engineering, music theory, instrumental pedagogy.
- Co-founder of live performance act: designed automated systems, coordinated logistics and scheduling, optimised workflows, and led technical innovation.

Creative Technologist (Selected Projects) Independent

2015 – 2020

- Exhibited sound art and interactive installations at internationally recognised venues and festivals, including Tate Modern (London) and Ars Electronica (Linz), applying real-time signal processing, generative audio, and interactive ML techniques.
- Defence to Forbid (experimental sound art production) — Goldsmiths' Everything Must Go Festival, 2018
- Igniting the Universe (interactive composition) — We Are Robots, 2018
- Painting Music (sound art installation) — Heart and Soul, 2018
- Penillion (live graphic coding and orchestra performance) — Michael McGearry production, 2017
- Additional creative works in performance and music available upon request.

SELECTED PUBLICATIONS & PRESENTATIONS

- “Lead presenter on AI Voice Conversion at ISMIR Tutorial” — ISMIR2024
- [“Analysis, Disentanglement, and Conversion of Singing Voice Attributes”](#) — PhD Thesis, QMUL2024
- [“Comparative Analysis of Latent Regressor Losses for Singing Voice Conversion”](#) — SMC2023
- [“Zero-shot Singing Technique Conversion”](#) — CMMR2021
- [“Exploratory Study on Perceptual Spaces of the Singing Voice”](#) — AI Music Creativity2020