

Gregor McWilliam

Software Engineer | Audio AI and Real-Time Systems

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PROFESSIONAL EXPERIENCE

SOFTWARE DEVELOPMENT ENGINEER IN TEST II, *Amazon.com*, Sunnyvale, CA, 2022-Present

- Developing self-service, organization-wide AI speech-generation tool, saving over \$100K within one team alone and reducing data collection lead time from months to minutes; currently driving EC2 migration and full API and MCP server integration to expand access company-wide via existing AI-agent orchestration tools
- Engineered custom microcontroller test rigs and automated telemetry analysis to build and scale an organization-wide competitive benchmarking program that delivers critical performance data for 20+ devices and defines audio KPIs across multiple major Amazon products and features
- Architected complete device- and feature-class hierarchies across diverse product families – Echo Buds, Fire TV remotes, and Fire TV Sticks – yielding modular, extensible structures that support development of audio and AI features, including ASR, AED, ANC, spatial audio, conversation detection, PSAP, and adaptive EQ
- Led SQA and automation for two novel, proprietary Amazon audio-AI features – localizing freely placed Echo devices into unified 5.1 surround-sound clusters via the Hungarian algorithm for Alexa Home Theater, and validating on-device neural dialogue enhancement via knowledge distillation for Dialogue Boost – the latter credited by Amazon's research with 86% listener preference and 100% approval among users with hearing loss
- Built acoustic test labs and automation infrastructure from the ground up – including HATS, 3PASS, and ACQUA support – to enable full test automation, remote tooling, and unattended 24/7 execution

AUDIO, ACOUSTICS, AND MACHINE LEARNING INTERN, *MediaTek USA Inc.*, San Jose, CA, 2021-2022

- Prototyped and integrated DSP algorithms and AI models into the company's IoT devices via Yocto
- Created real-time signal analysis applications in C and Python for remote evaluation of ASR performance

GRADUATE TUTOR (DSP AND SPATIAL AUDIO), *New York University*, New York, NY, 2021-2022

- Instructed over 70 students in graduate-level DSP theory, programming, and spatial audio systems design
- Delivered in-depth tutoring sessions on topics such as the DFT, convolution, beamforming, and crosstalk cancellation

EDUCATION

NEW YORK UNIVERSITY, New York, NY

Master's Degree in Music Technology, May 2022, GPA: 4.0/4.0

- Specializations in software engineering, digital signal processing, spatial audio, and deep learning
- Coursework included Digital Signal Theory, Audio Streaming, MIR, 3D Audio, and Advanced Acoustics
- Dr. Ilpo Martikainen Genelec Audio Visionary Scholarship, 2021-2022; Graduate Student Scholarship, 2020-2022

TECHNICAL PROJECTS

NOTABLE – VOICE-FIRST NOTE-CAPTURE APPLICATION, *GitHub*, 2026

- Developed voice-note capture app using Silero VAD, on-device faster-whisper, ASR, and ChromaDB semantic search

AI SUMMARIZER – PRODUCTION REST API FOR AI-POWERED TEXT SUMMARIZATION, *GitHub*, 2026

- Deployed FastAPI summarization service with layered, provider-agnostic architecture, Redis caching, SSE streaming, and multi-format ingestion across four unique endpoints

TALKSPACE – IMMERSIVE VIDEOCONFERENCING APPLICATION, *New York University*, 2022

- Designed JavaScript application that incorporates spatial audio into online videoconferencing
- Implemented real-time communication, HRIR convolution, and dynamic head-tracking

ELEV8 – VST SPATIALIZATION PLUGIN, *GitHub*, 2021

- Crafted binaural VST spatialization plugin using precise HRIR convolution in C++ and JUCE, earning nine GitHub stars

TECHNICAL SKILLS

LANGUAGES: Python, C, C++, JavaScript, HTML, MATLAB

LIBRARIES / SOFTWARE: FastAPI, PyTorch, Redis, ChromaDB, Whisper, JUCE, WebRTC, PortAudio, ALSA, Web Audio API, PyQt

HARDWARE: Consumer devices, MEMS microphone arrays, Arduino, Raspberry Pi 4, embedded Linux, Android

AFFILIATIONS AND INTERESTS

AFFILIATIONS: IEEE, AES (member and volunteer at Fall Convention 2020), ISMIR

INTERESTS: Audio, AI, extended reality, entrepreneurship, soccer, rugby, snowboarding, distance running, music production